THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

SEPTEMBER 1917
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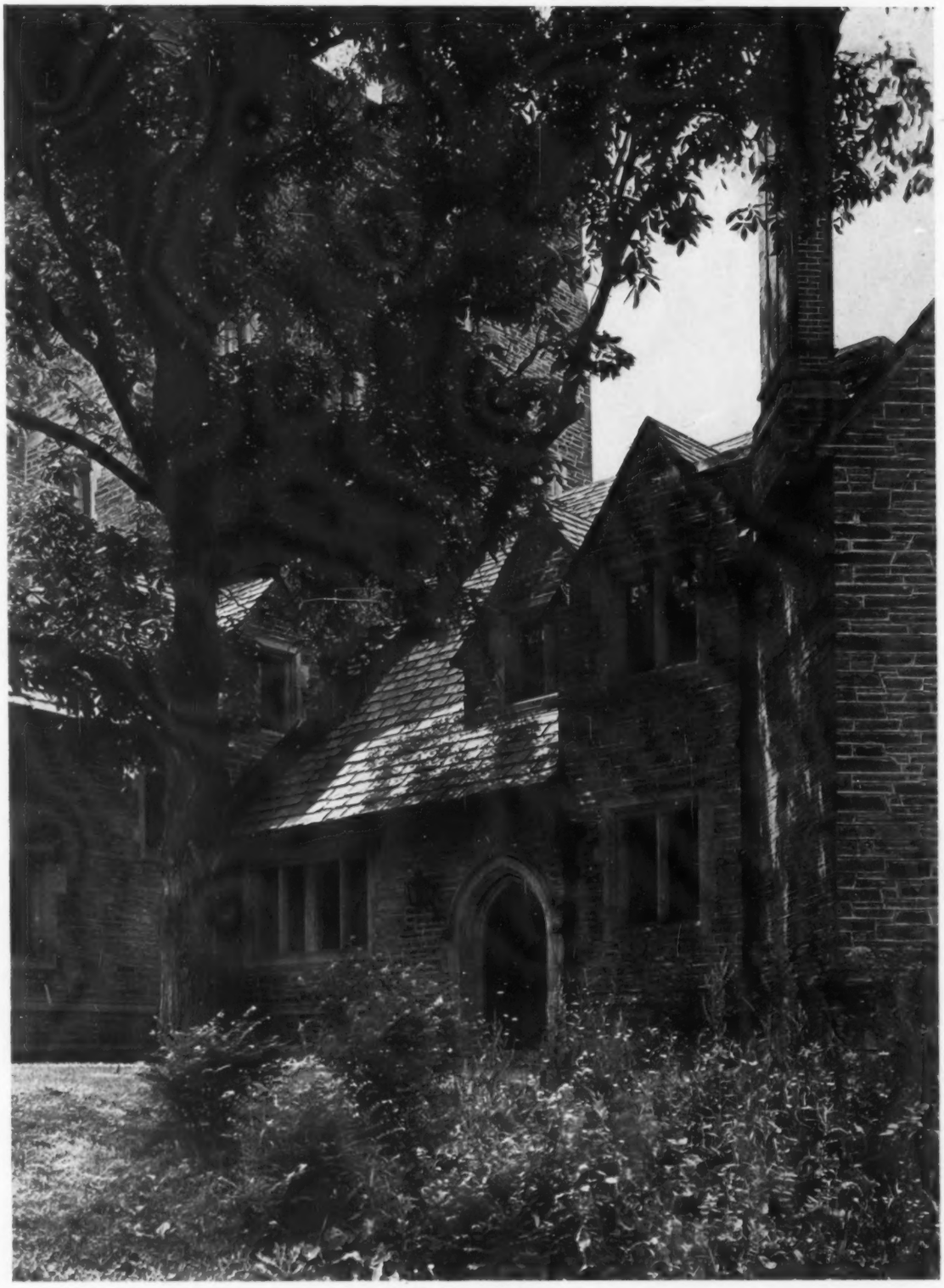

DETAIL OF STREET FACADE

BAKER COURT, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS

THE ARCHITECTURAL FORUM
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One-Story and Open-Air Schoolhouses in California

SECOND AND CONCLUDING PAPER

By WILLIAM C. HAYS

IN the previous article, published in July, 1917, the attempt was made to explain the simplest unit which, repeated in varying ways, goes to make up the one-story or open-air school *ensemble*. Something of the inner significance of this return to an age-old type was there illustrated by particular reference to one simple and charming example at Pasadena.

It remains to seek out some of the other phases of the problem, such as its physical and psychological aspects.

California comes honestly, as through inheritance, by this broad-spreading type of architecture in her schoolhouses, for the earliest schools in the state, those connected with the Missions, were held in rooms grouped about patios and under arcades. If primarily the Franciscan fathers built their structures only one story in height because the restricted material and labor did not permit them to do otherwise, they at least builded better than they knew to fit the peculiar conditions of the unknown country in which they found themselves. The type which their unskilled Indian helpers constructed naively, with "adobe" bricks, so suited the climate and, on the whole, so well met the quite unforeseen earthquake conditions that it was adopted without further experiment for most of the construction, institutional or domestic, during the days of the *padres* and the *rancheros*.

Years later, after the exploiting of California had suppressed all Spanish power and too much of the Spanish traditions, a half knowledge of architecture, and a rather sentimental revulsion toward a past with which the new conditions had very little in common, led to the demand for "Mission" architecture as the one and only appropriate "style" for public buildings and schoolhouses in particular. In the wake of the abominations launched then, there now seem to be following signs of a saner view — the view which recognizes a polar difference between the essential, informing spirit of architecture and the meaningless copy of superficial detail. However, all too commonly is style—the transient quality—exalted above those qualities — the architectural fundamentals — which, being changeless, are at the rare creative moment called forth into vitally new expressions, as new problems arise.

In its beginnings the California type of one-story school building, whether large or small, is probably more directly a response to certain practical needs than to any clear-cut philosophy of educators. There is little doubt that mere considerations of safety in time of earthquake or panic, and simplicity of construction, have been more directly responsible for the first growth of the type than any other causes. While it is true that the districts of the state most subject to earthquakes are near San Francisco, and while it is equally true that perhaps the best examples of one-story schoolhouses have been thus far developed in the district about Los Angeles, nevertheless earthquakes are by no means unknown in the southern part of the state. Fires, however, with their attendant danger of panic, may occur anywhere. If one can eliminate all stairways, then a long step is taken in the direction of safety, for escape in times of danger is assured, and there is no chance for stumbling or consequent jamming of the exits ; there are no inside corridors, with their inevitable turns and congestions, since one steps from the room directly out of doors. This one-story type, further, is ideal for the smaller children, who have no leg-stretching stairs to climb.

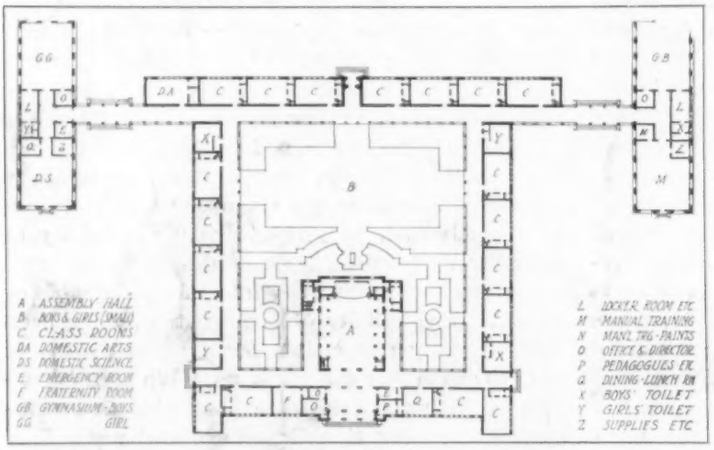
There results, of course, a lack of compactness which under some conditions is a defect in the scheme, although, all things considered, the amplifying of extent has more advantages than disadvantages. First cost of construction is somewhat more than that of a multi-storied building which provides the same accommodations, although the

difference is less than it would appear at first glance. Greater length of foundations, but somewhat lighter; larger roof areas; longer runs of piping; wiring and other equipment — all these add to the cost. Largely to offset these additions in cost, however, it may be noted that the stairway space — a multiplied loss in the repeated stories of the high building — is all saved for class room area in the one-story building. As to upkeep and the matter of everyday care taking, there seems to be little difference in cost of efficiency between the two types.

From the viewpoint of administration there is no serious objection to the lack of compactness in the one-story building, at least, for the grade schools. In high schools, if the registration is very large, requiring the movement of crowding pupils between classes, the scheme is not so practical, although this objection does not hold in the smaller high schools. With the younger children their natural restlessness makes it desirable that they should move about, so the long corridors serve an admirable purpose, for when bad weather comes these roofed spaces prove anew their great value, and used for play, give plenty of length for a romp. Unless the passageways are partly enclosed, air circulates so freely that there is no danger of treacherous drafts, and in California, except in a few localities, there is never a need for glazing or enclosing much of the corridor, even during the cold or rainy season.

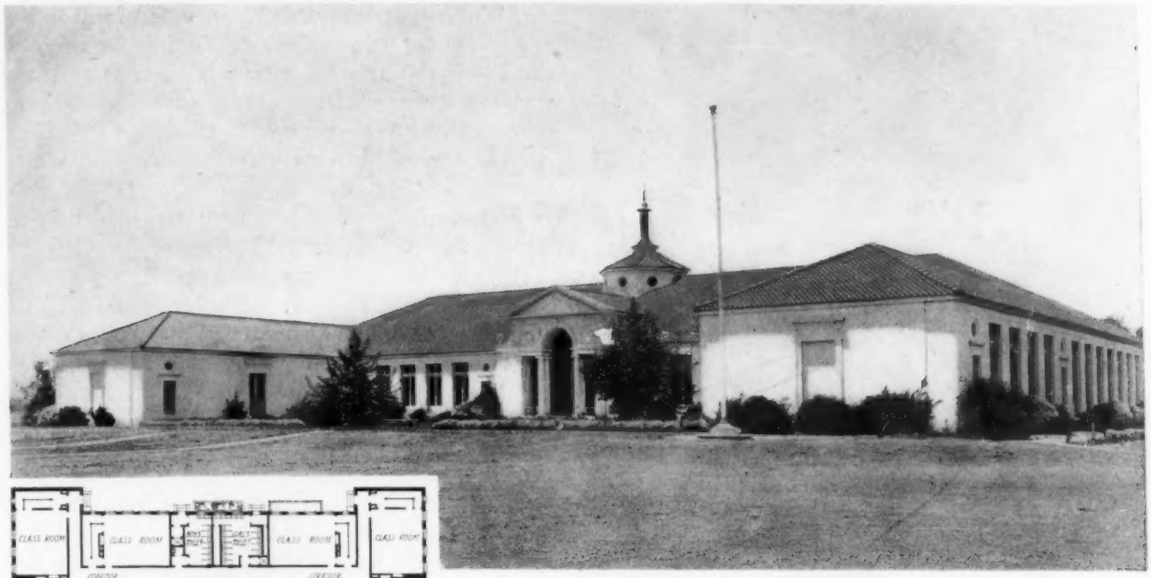
Thus far we have considered factors which, pointing most favorably toward the one-story school building, are almost all of a practical, "hard-common-sense" character.

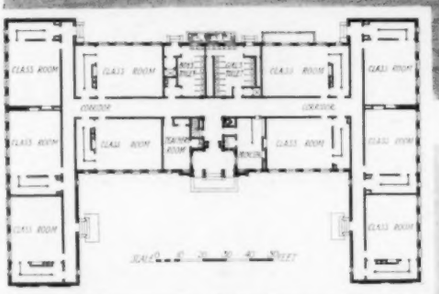
But deeper, if less tangible, forces have been at work in the minds of those who think much about school buildings. There has been much consideration given to the psychology of the problem. Longfellow, in his day, could write of "The Children's Hour"; but one fact to which people are reawaking is that we live in the day, the age, and not merely the hour of the child. To prepare children, by an enlightened fitness, for duties already far more complex than their parents will ever grasp, and which duties posterity must assume, is the first concern of



Ground Floor Plan of Lockwood School

Lockwood Elementary School, Oakland, Cal.
John J. Donovan, Lewis P. Hobart, Associate Architects

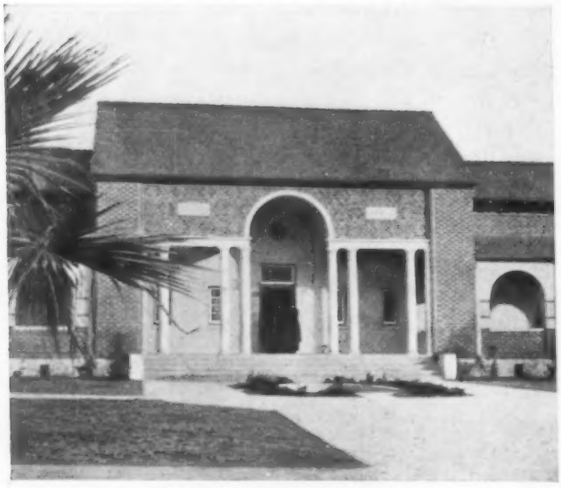




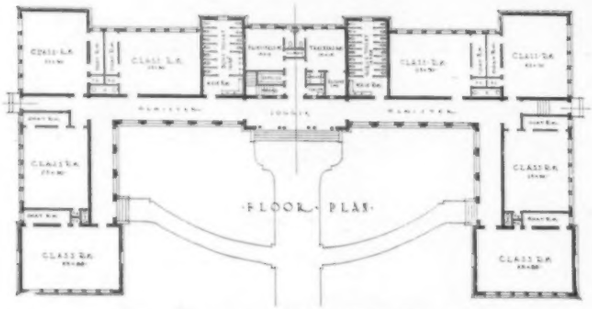
DETAIL OF ENTRANCE FACADE

GRAMMAR SCHOOL, CHINO, CAL.

WITHEY & DAVIS, ARCHITECTS



Detail of Entrance Pavilion



Floor Plan, Grammar School, Glendora, Cal.

our passing generation. Naturally it comes about that it is in those localities least bound down by tradition, the more plastic, mobile outposts, where these problems of the new old phase of the school problem are first foreseen and their solution first seriously attempted with the necessary spirit.

"We will try anything, once, in California," is a claim (or confession, depending on the outcome of the trial) commonly heard and not without some basis. Along with Kansas and several other Western states, the great "Coast" state is a very active civic laboratory, in which have been observed, investigated, and established — or discarded — many principles since become of national importance. Forty-six "initiative" and "referendum" measures voted upon at a single general election! Taking nothing "for granted" or by empirical assumption, Californians are alive to the really unsettled state of problems which, in more conservative neighborhoods, are regarded as fixed. Having in mind this, on the whole, healthy state of unrest, I suspect that behind the well warranted, growing popularity of the one-story, "open-air" schoolhouse lies a logical revolt. It is the revolt, on the part of thinking men and women, against the restraining "schoolroom" itself — as an institution, physical, psychological, social. A generation which, having grown up under strict discipline and confined rule, swings, pendulum like, far back across the neutral axis to laxity and even toward excessive liberty. The schoolroom, they say, as apart from and *per se*, opposed to normal life, is an anomaly in the scheme of things. Schooling must be an undefined, rather subtle growth into living!

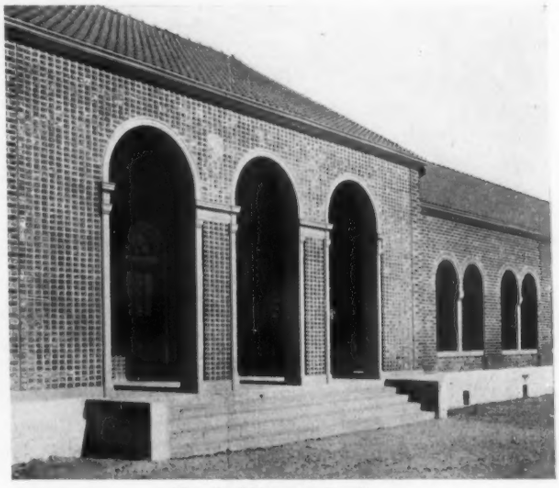
There is nothing new in this psychological point of view, any more than in the type of building under discussion. It is, in fact, only a re-statement of world-old principles. The Montessoris and Flexners do not belong only to our times, but were probably quoted, as of a more remote time, while Plato lived and taught! Only in name has there

Grammar School, Glendora, Cal.
Allison & Allison, Architects

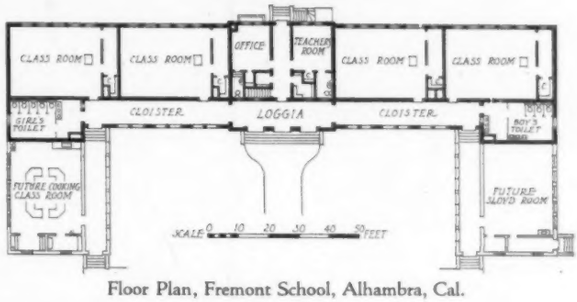
been change; we call their theories now "child-psychology" instead of the less concise "philosophy discussed by the ancients."

The opportunists, too, have much to say of the "spirit of the age," a pretty phrase, and misleading, for it is neither definite nor related to fixed time. Paul Shorey, indeed, quotes James Russell Lowell as saying, "I have seen too many 'spirits of the age' to be afraid of this one." But, whether old as time or new as to-day, high values lie latent in recognizing the intense and sensitive individuals, who mingling, are mankind. For this principle the World wars!

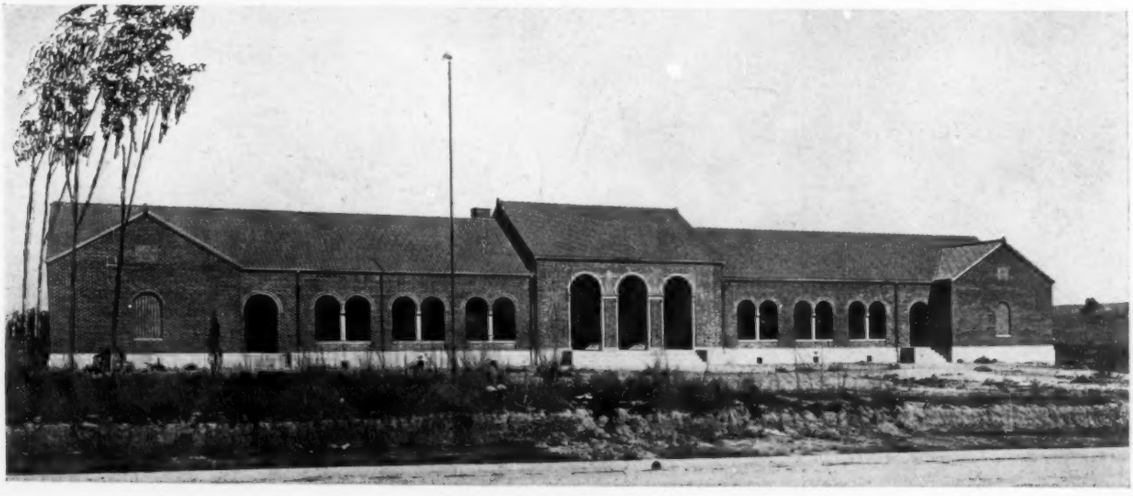
The school environment, then, which shall be a microcosm of life itself; which shall from the beginning accustom the child to "willing," to freedom of movement, to freedom of choice, and at the same time to a repeated experience of the unswerving results of such free choice; a practical, reiterated experience, until it becomes *d'habitude* in the association of action with reaction: this is the psychological basis of the new type of educational "plant." Surely, its special sort of curriculum must be taught in surroundings quite different from those connected by tradition with an old inexorable "rule of thumb" method. Something of this very different attitude has already been pointed out, none too clearly, in describing the Polytechnic Elementary School at Pasadena. The vital, guiding principle is the establishment as nearly as possible of a perfect *rapport* between the child and his physical and intellectual environment — the attempted reaching of a pupil through the channel of his responsiveness. The term "unresponsive" is, after all, misleading if not false, and its use depends upon whether or not the "response" is flattering. All sane people, young and old, are responsive; but it is the in-born attitude of all, particularly of children, to withdraw from the stranger. Shyness is the natural response to aloofness; friendliness to friendliness; ingeniousness in the presence of the accustomed. "Achieve such an environment and



Detail of Entrance Pavilion



Floor Plan, Fremont School, Alhambra, Cal.



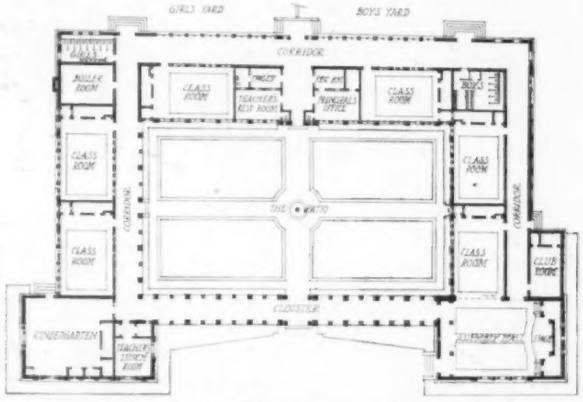
Fremont School, Alhambra, Cal.
Allison & Allison, Architects

you will have prepared your child's mind as a fallow field," say the psychologists; and it may be inferred that the simpler forms of building, such as the one-story type, promise best results as forming the least strange environment.

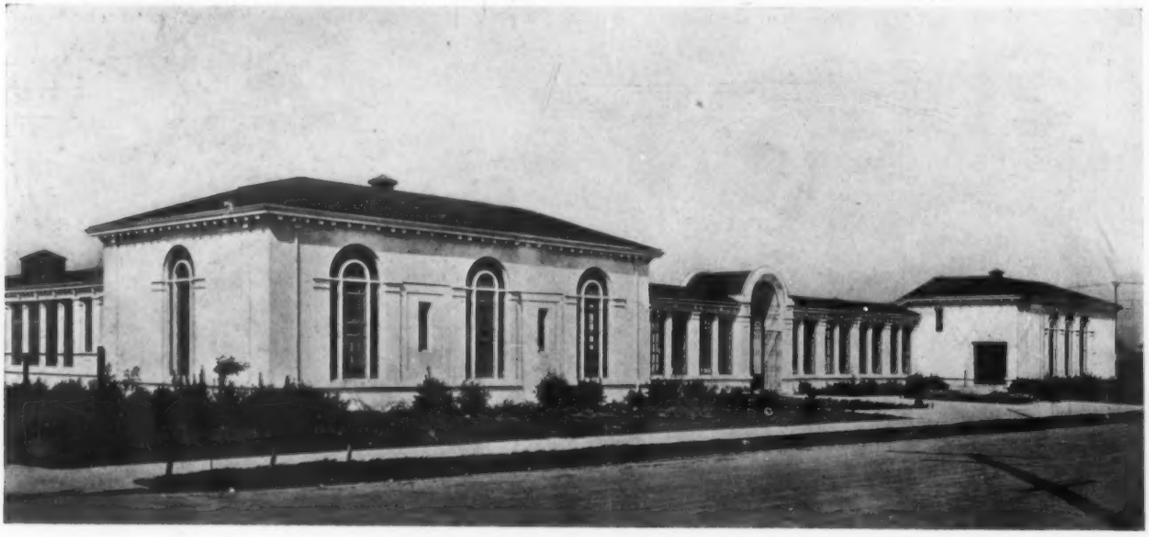
To contribute to this effect, as well as for several other reasons, it is desirable that the "institutional" look be avoided in school buildings, even though they must, commonly, be larger structures than their neighbors. Where, in a given large city, the relatively few children of the "well to do" have their play provided for, and can be taken to parks or out into the country, it is necessary to make some other provision for the play time of the great majority. Where schools are best located, that is, centrally for the larger areas of child population, the average surrounding building is small in scale, although an exception is found in the congested tenement districts of the larger cities. In any case with the larger cities, it is only for the outlying districts that the one-story buildings can be seriously contemplated; but, admitting it as a practicable possibility, this one-story type is least removed in character from the many small unit groups of the neighborhood housing.

In or near such closely populated districts, then, the low irregularly rambling type of design is best — that type which, preserving any natural growth of trees and shrubbery around it, least sets the schoolhouse apart and, removing it but little from the atmosphere of the every day life, therefore best meets at least one of the psychologist's problems. Thus planned for and properly established on an adequate site, the school with its yard makes use of enough room to allow for some planting of trees as well as flowers. At almost negligible cost the school administration can assure an area in which some thought has been given to beauty as a neighborhood asset, and it can confidently be expected that such a lead will find a ready following.

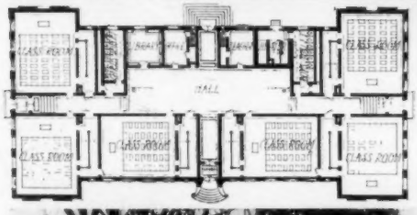
Thus far little has been said of the school playground — not because of any lack in its importance, but because its problems are simpler, and, as to its desirability, there is no difference of opinion. Even in connection with the ordinary, many storied type of building, the playground is a vital part; with our type it is interwoven inseparably. The one-story scheme, necessarily spreading out over large areas of ground, assures ample breathing and sunshine

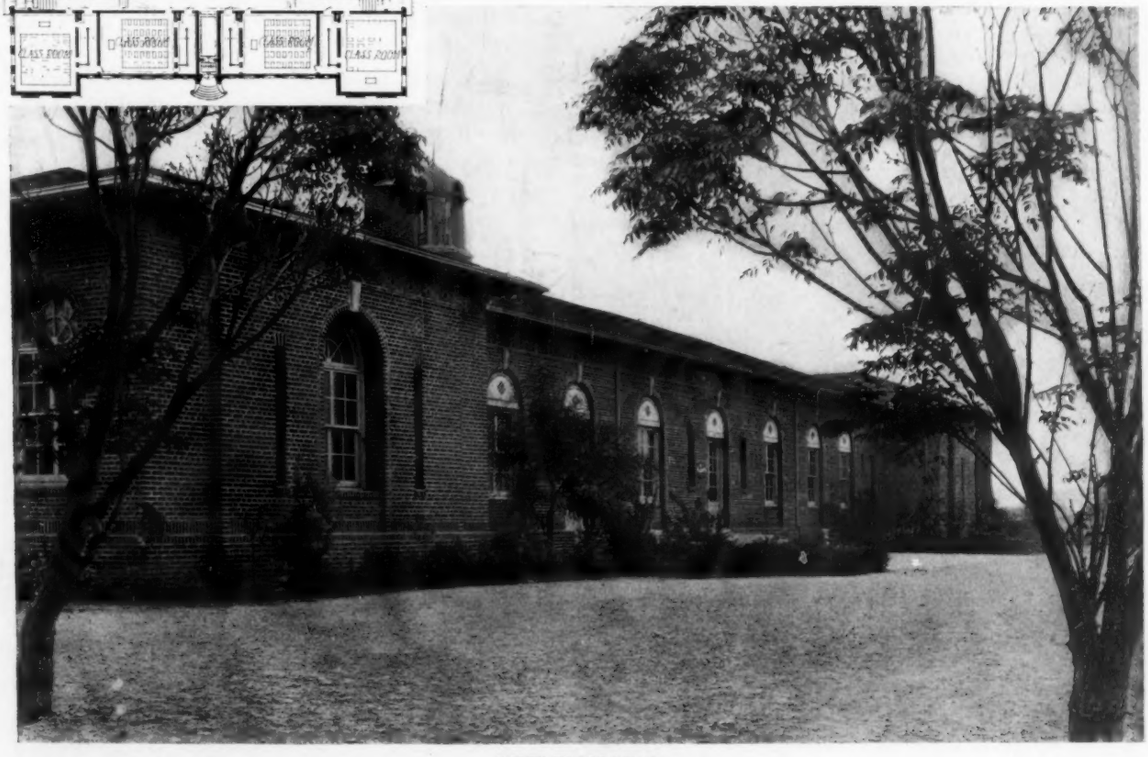


Floor Plan, Santa Fe Elementary School, Oakland, Cal.



Santa Fe Elementary School, Oakland, Cal.
John J. Donovan, Architect



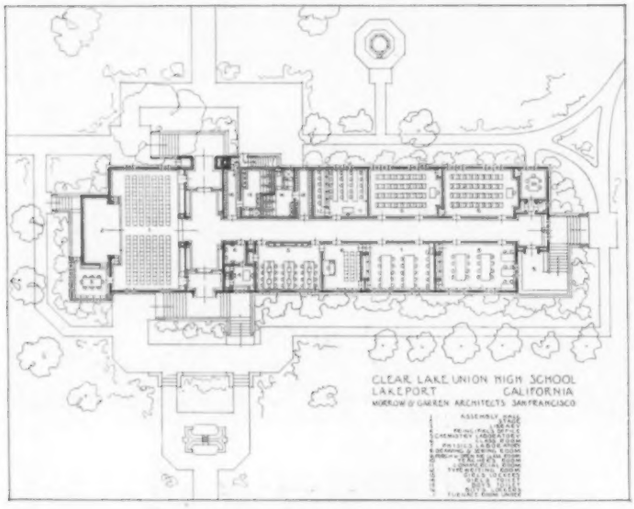


VIEW FROM REAR

GRAMMAR SCHOOL, ARTESIA, CAL.

WITHEY & DAVIS, ARCHITECTS

General View from Main Approach



Floor Plan, Clear Lake Union High School

spaces, even though taller buildings might in the future be built on all sides. Granting that the scheme is an impracticable one in congested districts where large land areas are not to be had, land in the growing California cities is still comparatively cheap and readily obtainable, because the people in most of these communities realize the potential value in these play spaces for wholesome childhood. The public playground is thus naturally developed for use both during recesses and after school hours; and the older generation have a part in its activities, with the corresponding psychological values that associate school with play, and that are inherent in the substitution of a spirit of joy for that of drudgery, in the child mind.

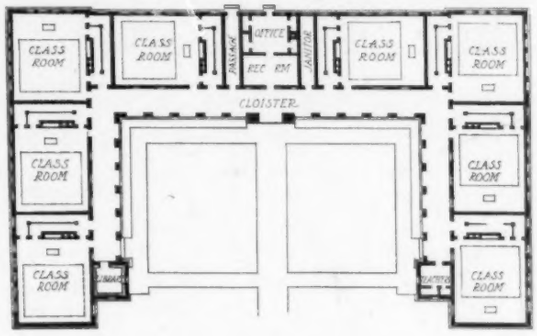
Of this subject of one-story schoolhouses, one writes as if they were the rule, rather than the exception. Unfortunately, the reverse is true, so that one wonders, for the moment, why the good examples are not more plentiful. However, this condition of things is not so strange, after all. How few are the men and women who really think! And even among these they are few who have vision, and fewer still who dare venture, while the venturesome find followers seldom indeed. For how shall we distinguish between the "visionary" and the one with vision? "We cannot face things as they are, for we cannot see things as they are; but — as they appear," some one has written.

But those to whom is entrusted the responsibility of providing schoolhouses are not supernormal men and women, neither are the boards nor their architects. How uncommon, then, must be the coming together of a trained, sympathetic, and far-seeing architect and a school board that understand how to help, instead of hinder, in fully developing the possibilities of the

Clear Lake Union High School, Lakeport, Cal.
Morrow & Garren, Architects

problem in hand! Not every architect with whom the authorities deal is fitted to design schoolhouses, for his must be an open and flexible mind, who may hope to appreciate the many viewpoints and to solve such an ever varying problem.

In reality, school buildings — more especially those "up-the-state" — are too commonly treated as of negligible importance and are too seldom entrusted to capable designers. Conditions are slowly improving, of course, but the architectural profession has heretofore attached minor importance to this "country town" practice. It has been a legitimate field for the scrambling of mediocre men and the technically unfit, for whom there seem to be assumed different standards of ethics, or no standards at all. When local school boards, meaning well, but having only half-knowledge, engage the proffered services of self-styled, sales-soliciting "specialists," they are, too commonly, worse than wasting their opportunities. As there are, in business, "good trusts" and "bad trusts," so of course there are capable and incapable "specialists," but the better ones usually say little in regard to their special fitness for consideration.



Floor Plan, Grammar School, Santa Paula, Cal.

How shall boards learn wisely to seek *the man* (rather than to permit *a man* to seek them), the man, not too plausible and "cock sure," who frankly says: "Together we must analyze our problem, and take what length of time it may need, until in finding the essentials of the problem we will have evolved a solution vitally new"? It matters but little how many buildings of any type the "specialist," if he chance to be of the wrong kind, may have built; for many of them may be failures. And the enthusiastic, trained man — with never a schoolhouse in his experience — may so master the problem and its intricacies as to produce the masterpiece. There are many such men, most of them relatively young with no claims to any "specialties," to whom might confidently be entrusted important commissions for school buildings, and the results might be depended upon.

It is because of this too frequent failure to bring about the intelligent co-operation of officials and their architects in making a serious study of the problem that so comparatively few successful school equipments ever come into being.

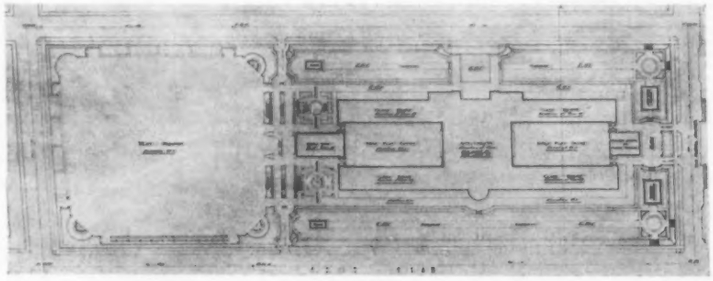
Grammar School, Santa Paula, Cal.
Withey & Davis, Architects

Woodridge Langley School, District of Columbia

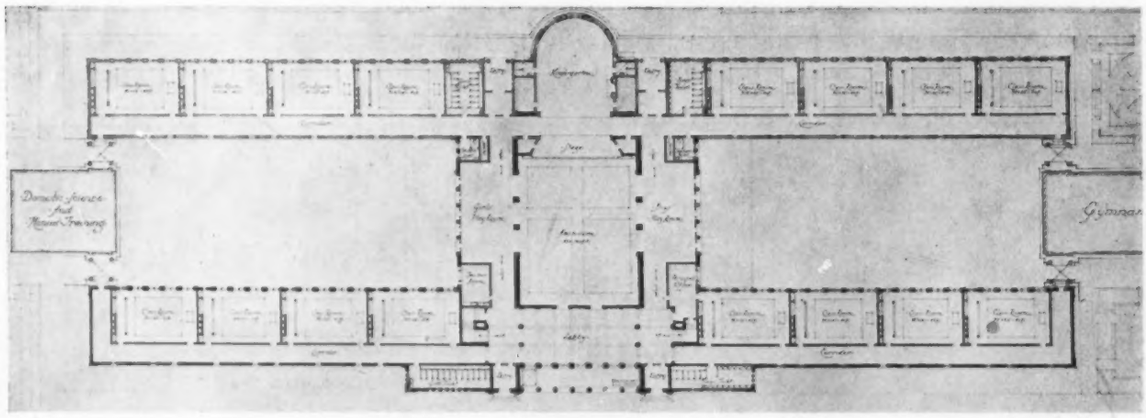
JAMES RUSH MARSHALL, ARCHITECT
SNOWDEN ASHFORD, MUNICIPAL ARCHITECT; BEDFORD BROWN, ASSOCIATE

IT is interesting to note that the one-story type of school building which is so admirably suited to conditions on the Pacific Coast has many features that commend it for use in the East, as evidenced by the Woodridge Langley School to be shortly constructed in the District of Columbia. Different climatic conditions necessitated some deviations from the California principle and further changes were required by the contemplated use of this building as a community center, but the large extent of the grounds and the completeness with which it is proposed to develop them, together with the material departures from the usual type of Eastern school plan, make the building of especial interest from both educational and architectural standpoints.

The entire structure is of the one-story pavilion type with exception of the central part containing the auditorium, which is two stories high to provide a balcony and two class rooms with north light. The kindergarten adjoins the stage and may be made a part of it when occasion demands. All of the class rooms are south lighted with protecting corridors on the north. They are 22 feet wide and graded in length from 28 to 32 feet. Coat rooms adjoin each, and are separated by a screen reaching to the top of the blackboard. Closets occupy the space not used for flues in the east walls. Toilets are located in each of the four wings and principal's and teachers' rooms in central pavilion. The heating of the class rooms and auditorium will be from indirect radiation with individual fans and fresh and foul air ducts, and other portions from direct radiation.



Plot Plan



Ground Floor Plan

Elevation of Rear

The Motion Picture Theater

IV. HEATING AND VENTILATING AND TYPE OF PLAN

Fourth and Concluding Paper

By CHARLES A. WHITTEMORE

TWO of the principal requirements of a motion picture theater are good heating facilities and adequate ventilation. A few years ago in theater construction they were dismissed as of slight importance and little or no attention was paid to the careful layout of the installation which its satisfactory working demands. In many instances it would have been far better to have eliminated some of the expense in decoration and display and put a little more money and thought into ventilating equipment.

The convenience of the patrons is so vitally affected by the conditions of the air and temperature that the majority of owners of motion picture theaters to-day are realizing the importance of these factors and are turning their attention to the proper heating and ventilating of their theaters. The more recently constructed motion picture houses show clearly the study of the subject and the attempts to increase the comfort of the patrons in this direction.

There are roughly two types of ventilating systems in general use: one in which the air is taken out at the floor and the other in which the air is taken out at the ceiling. The relative merits of these two types from a scientific standpoint need not be discussed in this particular article, but in order to illustrate clearly the difference between the two types, it may be well to call to mind a few of the factors pertaining to each.

Vitiated air, being warmer than the surrounding atmosphere, has a tendency to rise. Particles of dirt and other foreign matter in the air are heavier than the atmosphere and have a tendency to fall. The contentions of those who favor removing the air at the floor are that the fresh air brought in at the ceiling and exhausted at the floor allows a continual current of fresh air to pass by the patrons without allowing any of the vitiated air to rise.

Theoretically this may be true, but those who oppose this theory and uphold the other scheme—that is, taking the air out at the ceiling—maintain that in order to accomplish ventilation by this method, not only is a larger maintenance cost incurred, but also that theory and practice do not work together. Actual tests will demonstrate that vitiated air does rise to a certain extent, contrary to the theory of those who uphold this type, even though the ventilation currents are working in the opposite direction.

There are also practical difficulties in the way of operating this scheme to advantage, in that it is necessary to pull the air down to the lower levels and then have the discharge fan, which is usually located at an upper level, pull the air up again. Those who favor the other type ask why it is not advisable to allow the natural upward tendency of the heated air to assist the ventilating apparatus in accomplishing its work. They also maintain that by introducing fresh air near or at the floor level the ventilation is more effectively accomplished and the vitiated air is carried off at once without any possibility of the patrons rebreathing it. This type of layout is as simple as the first type, and the maintenance cost per cubic foot of air exhausted is no more and possibly less than in the one first described.

The actual tests of the types above noted should be the criterion by which any installation should be accepted and, when one considers that possibly 1 per cent of the theaters in the country are equipped with the ventilation system of the first type as against 99 per cent of the second type, the balance seems to be in favor of the second type.

In some places the law requires the first type to be installed, but the reasons for doing so are not clear, and such an installation, as a rule, requires the services of special heating units in conjunction with the ventilation plant. For example, radiators are required in the outside walls and are all equipped with a fresh air box leading through the wall to the outer air and are called direct-indirects. The air comes in through the box, close to the floor, and is warmed by passing over the heating surface, discharging at the top of the radiator through a grille just below the breathing plane. This constitutes the only fresh air supply in this type of construction. It is possible to arrange the dampers in the air inlet in such a manner that the air can enter directly into the auditorium without passing through the radiator. This affords an opportunity to temper the air when the heating system is in use and is of great value in warm weather as an aid to ventilation.

The vitiated air passes from the auditorium

through registers placed at the floor level, usually at the base of a vertical duct, at the top of which is an exhaust fan of the propeller or multi-vane type. This system depends entirely on the exhaust fan for its working, as natural ventilation by perflation is impossible. This scheme also does not contemplate anything in the nature of plenum chambers where the air is forced into the room, nor does it permit the installation of individual ventilation for the seats or sections of seats.

Under the arrangement noted above it is exceptionally difficult at times to ventilate properly the space at the rear of the orchestra directly below the balcony, and at any time this section of the house presents the most difficult ventilating problem.

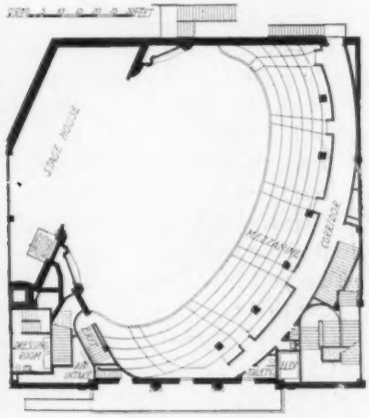
Since the first type is so simple in comparison with the second, a detailed study of the latter method will be of more value. In this arrangement the fresh air is taken in as much above the ground level as possible so as to be free from the dust and dirt in the air. It is brought through ducts to a fan which in turn discharges into a large chamber called the plenum chamber, or into a system of ducts leading directly to registers or grilles located in such a manner as to distribute the fresh air evenly through the various parts of the house. A similar system of ducts is arranged on the ceiling under the balconies and galleries and sometimes in the main ceiling, these ducts all extending to one central point, at which place the exhaust fan is located.

This is the essential part of the ventilation system and to its construction can be added various refinements in the nature of washers, tempering coils, aspirators, etc., as the conditions will allow.

Interior of Auditorium

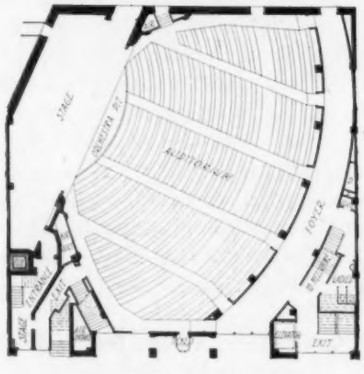
RIALTO THEATER, CHICAGO

The seating capacity of 1,500 people is unusually large for the size of the lot occupied — 98 by 100 feet. Full advantage of the area was obtained by placing the auditorium diagonally within the square. A small mezzanine balcony where smoking is permitted is a feature of the interior. The space usually occupied by boxes is designed for the air supply and the organ. The interior work is of the Adam period in two tones of travertine color, with inlays of turquoise blue and gold. The walls are paneled with red and gold brocade. The lighting is by indirect reflectors, concealed in coves. The exterior is of old ivory terra cotta with columns of dark green terra cotta and gold caps and bases. The marquise is utilized as a fire escape balcony. Three green bronze doors open on to it from the center of Greek grille work done in dull green terra cotta, behind which a remarkable effect of glass has been obtained by the use of deep purple terra cotta.

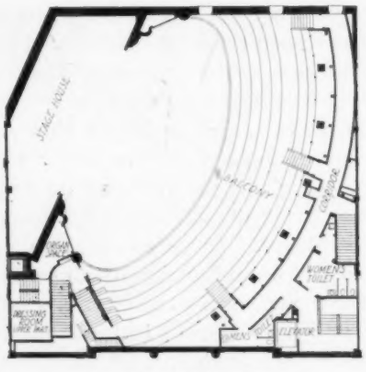


Mezzanine Floor Plan

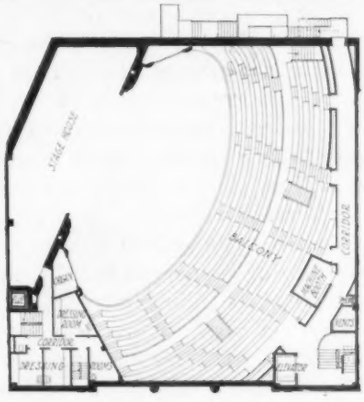
RIALTO THEATER, CHICAGO, ILL.
MARSHALL & FOX, ARCHITECTS



Auditorium Floor Plan



Lower Part of Balcony Plan



Upper Part of Balcony Plan

RIALTO THEATER, CHICAGO, ILL.
MARSHALL & FOX, ARCHITECTS

The duct work between the fresh air inlet and the fan should be arranged in such a way as to permit of re-circulation of the air. In cold weather, when the thermometer may be down nearly to zero, the amount of coal required to heat the outside air to the desired temperature for the auditorium is a large item, and in order to effect a saving on this coal consumption the air in the auditorium is exhausted into the fresh air chamber by the same fan which forced it in through the plenum chamber.

This is the re-circulation principle, as the same air is used repeatedly but is mixed with fresh air and subjected to other processes to remove impurities. This is accomplished by some form of filtering device or apparatus specially designed to remove the dust and dirt and render the air fit for breathing again.

There are various types of construction designed for the purpose of removing dust and dirt and these types are constantly undergoing changes. The first type used to any great extent was the cloth screen. This was constructed with a strong frame the full size of the inlet opening, and cheese cloth or similar material tightly stretched upon it was used as a filtering medium. The air passing through this cloth was found to give up a large percentage of the dust and solid impurities and be much more hygienic and suitable for breathing. The percentage of impurities removed was not sufficiently large, however, so other methods were studied.

The next step was to arrange a fine spray which would keep this cloth moist and in this way it was found that the air was not only better cleansed but also cooled. This showed the possibility of devising a mechanical means of cleansing the air and lowering the temperature at the same time and led to the development of the air washer.

The disadvantage of the screen type of filter is, however, that the pores in the cloth very soon fill up with the more solid particles. The screen then forms too great an obstruction to the free passage of the air. To overcome this difficulty it is necessary to remove the cloth at frequent intervals, and substitute clean cloth, thus requiring a double set of filters.

Another type which has been extensively used is of a similar nature but different in detail. In this type the filtering medium is cloth, but arranged in the form of bags so that the air from either the fresh air chamber or the re-circulation duct passes through a metal plate which is pierced with openings about 12 inches in diameter, and at each opening is a cloth bag. These bags are sometimes arranged, as noted in connection with the cloth screens, with a spray to keep the cloth moist. The advantage of the bag over the flat screen is that the heavier particles of air settle to the bottom of the bag without obstructing the openings for the air to pass through. In this installation also, however, it is necessary at intervals to change and cleanse the filter bags.

In more recent years an air washing device has been invented which serves the purpose of not only cleansing the air, but also of reducing or increasing the humidity and tempering the air to the proper degree in cold weather and also cooling it in summer.

This device consists in its elemental form of a large rectangular metal case in which is first placed the primary heating radiators or coils. These are for the purpose of raising the temperature in extreme cold weather to a predetermined point, under which conditions the air is more readily suited for the cleansing and cooling process. The air passes through these tempering coils and then is conducted through a duct to the spray chamber. This chamber contains a large tank in which water is kept at a constant level by means of a float or automatic device of some other sort, and the water from the tank is conducted through a pump to the pipes, to which are attached the spray heads. The spray heads are so regulated that the water under pressure going out through them forms a very fine mist and the particles of water, coming in contact with the particles of dust and dirt in the air, carry most of the impurities down into the tank so that the air after passing through this spray is probably 90 per cent clean.

After this operation the air furthermore encounters a series of eliminator plates which are designed in such a manner that the air must pursue a tortuous course, continually striking against projecting edges which have a tendency to extract excess moisture and also take out any remaining particles of dirt. The air then passes through a secondary heater where it may be raised to any desired temperature for warming purposes.

From this latter chamber it is conducted by ducts either to the plenum chamber or to the fresh air duct system. In either case the effect is relatively the same to the audience except that the plenum chamber permits of more general distribution of air through the house than is possible with the duct system.

In the air washer, if the temperature outside is particularly high as in summer and the humidity is very great, the spray need not be operated and only a small amount of water used on the elimina-

tor plates in order to keep them clean. The air then passing through these plates is cooled and at the same time gives up a percentage of any excess humidity.

Sometimes, also, the primary heater may be used in order to raise the temperature of the outer air and drive off some of the humidity before the air is washed. It is not advisable generally to use the heater in warm weather, however, as it necessitates lowering the air from a point above the prevailing temperature of the outer atmosphere.

The cooling process by means of the air washer is effective except in extreme cases, in which some other means must be employed to reduce the temperature further, and it has been found by tests that ice placed in the water tank will cool the water to such a point as to materially assist in bringing the temperature to the desired degree. This, however, is very expensive, as a ton of ice, for example, will lower the temperature of 22,000 cubic feet of air for a relatively short time only, and such an arrangement would accordingly be of value only for installations in such buildings as banks, where the demand is for a short interval of time during the middle of the day. In a motion picture theater it is more advisable to adopt some other expedient. For this purpose a small refrigerating machine with a brine circulation has been found most satisfactory.

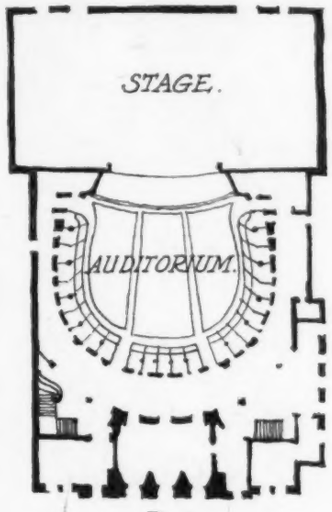


Fig. 1

In this latter method of construction the refrigerating machine operates in the same manner as when artificial ice is made and the brine circulation pipes are carried through the water tank, cooling the water to a given temperature, as 46 degrees for instance, which in turn passes through the spray heads and has a decided cooling effect on the air.

As an assistance in cooling the air the water for the air washer is frequently pumped from an artesian well, the temperature of which is always lower than city water. By this method refrigeration or other cooling device is not needed except under the most extreme conditions, provided the artesian well water may be pumped at about 50 to 55 degrees.

In introducing air into the auditorium and its various divisions, there are three general types of construction. First, registers or grilles; second, mushrooms; and third, ventilators which are incorporated in the chair construction.

The first of these types is, as the name implies, an installation of registers in connection with the duct system. These registers usually have dampers, so that the air may be regulated in its flow and different volumes and velocities established as desired at any opening. The disadvantage of this type, as has been noted, is in its lack of flexibility and in the fact that the distribution of fresh air is not nearly so general as that provided by either of the other two types.

The second type consists of the installation of plenum chambers or large air areas, under pressure from the fan, with the openings from these various plenum chambers through the floor of the orchestra or other divisions of the house protected by what are called "mushrooms." These are ventilation devices of cast iron which are adjustable so that the air may be regulated, insuring equal distribution in volume and velocity throughout the entire auditorium. They are particularly good in efficient general distribution of fresh air.

The third type consists of openings cut through the floor at the aisles and at intermediate points where the seat standards occur. These seat supports are equipped with a special kind of register or grille, through which the air is brought directly into the auditorium. They are adjustable, so as to regulate the air flow in the same general manner as described for the other types.

The exhaust system is a reverse of the simple supply system and consists merely of various ducts carried to different portions of the house, which exhaust the air through registers or grilles at these points by means of a large fan which may be placed on the roof or other convenient location.

In connection with the exhaust system it is wise to consider the location of the exhaust registers so that the air may not be turned in the direction opposite to that of the sound waves. Otherwise, the patrons might find difficulty in hearing the words and music from the stage in the case of vaudeville or other performances.

In addition to the various subjects which have previously been discussed in connection with motion picture theaters, acoustics play an important part, but, unfortunately as yet the theory of

acoustics as applied to theaters has not been reduced to such terms as to make a fixed, inviolable rule of any particular value. The result is that each theater, being of special shape and size, requires individual treatment, making it necessary to study each problem by itself.

Types of Plan. All theaters may be divided into three general classes according to the type of plan, and while there are numerous variations from these standard types, reduced to the lowest terms, any theater may be classified in one of the three divisions.

The first type, Fig. 1, has a square auditorium in which the horseshoe type of seating plan is easily applicable.

The second type, Fig. 2, is a rectangular plan which immediately restricts the seating arrangement to one particular form.

The third type, Fig. 3, is also a rectangular plan with entrance on a long side in which a modification of the horseshoe type or the seating arrangement in Fig. 2 may be adopted.

The horseshoe type of plan as shown in Fig. 1 is not particularly applicable to motion picture theaters, although in many theaters existing to-day this seating arrangement may be encountered. It is difficult with this type to secure proper sight lines; the seats at the extreme sides of the house receive such a distorted view of the picture on the screen that they are practically useless. This type of plan is of special interest to those who have studied the foreign opera houses and the older theaters in the United States, as it was a type always adopted where possible, and it served its purpose well, for those theaters were devoted only to opera or drama — the motion picture being a recent development.

Fig. 2

The second type, Fig. 2, is the one most frequently found in the motion picture theater world and is the one best suited to motion pictures as a general rule. The depth, however, may be so excessive as to render vision and audibility rather difficult; but given a house of this type of reasonable proportions the results secured are almost certain to be satisfactory.

In Fig. 3 the seating may be arranged as shown or in the same manner as Fig. 1, in which case the same objection is noticeable as in the first type, that is, the extreme side seats are of little value.

In the commercial development of real estate to-day the theater plays an important part. No other type of building is so applicable to the development of "back land." No other type of building is so little dependent on street frontage. Few other types of building construction can be better adapted to irregularly shaped lots.

Fig. 1 shows a theater with a large street frontage and for opera or drama can be used to advantage. It does not show the possibility of developing the inexpensive "back land" so clearly as does Fig. 2 or Fig. 3. In these types the lobby and entrance foyer may obviously be arranged so as to enter the auditorium at almost any point. Two such arrangements are illustrated.

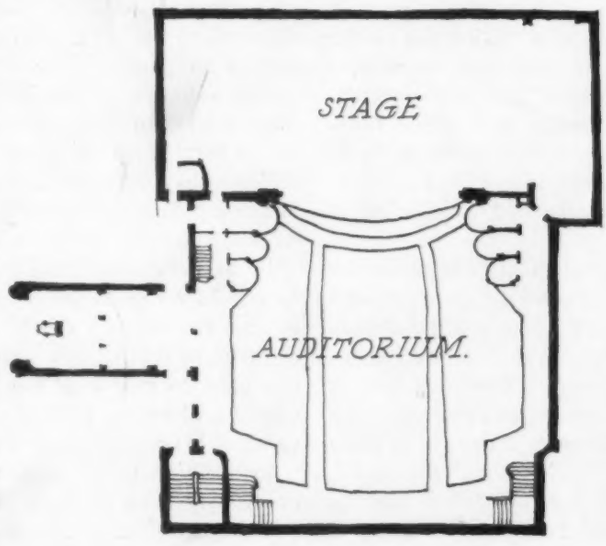


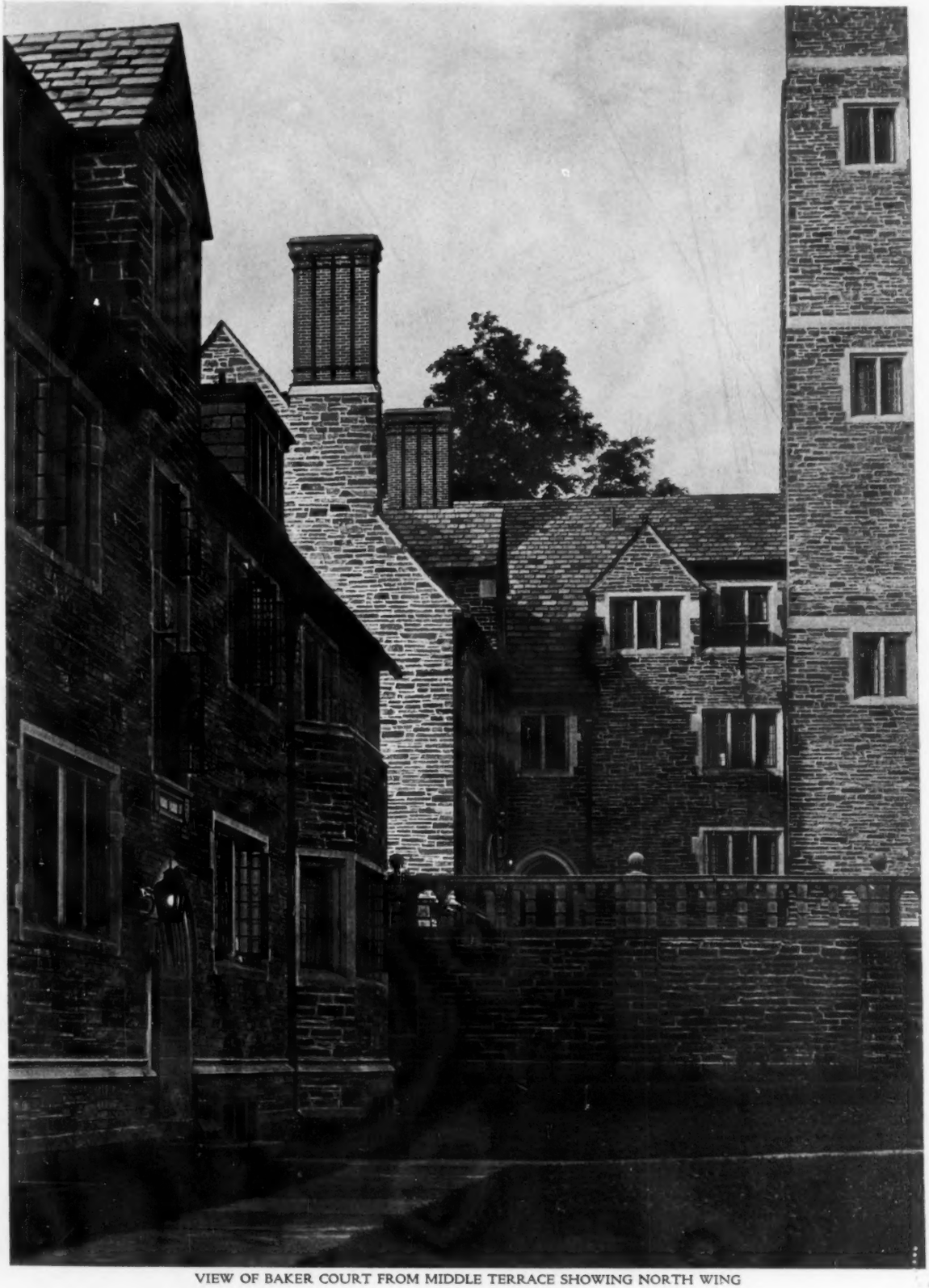
Fig. 3

By adaptations of these types almost any lot of land may be developed to advantage for a motion picture theater. Types are changing, constructional methods are changing, and theater managers are changing their ideas as to the wishes of the public. It is reasonably safe to prophesy that the theater in the next few years will develop into a building quite different from that with which we are familiar to-day.

VIEW OF BAKER COURT FROM WEST

DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS

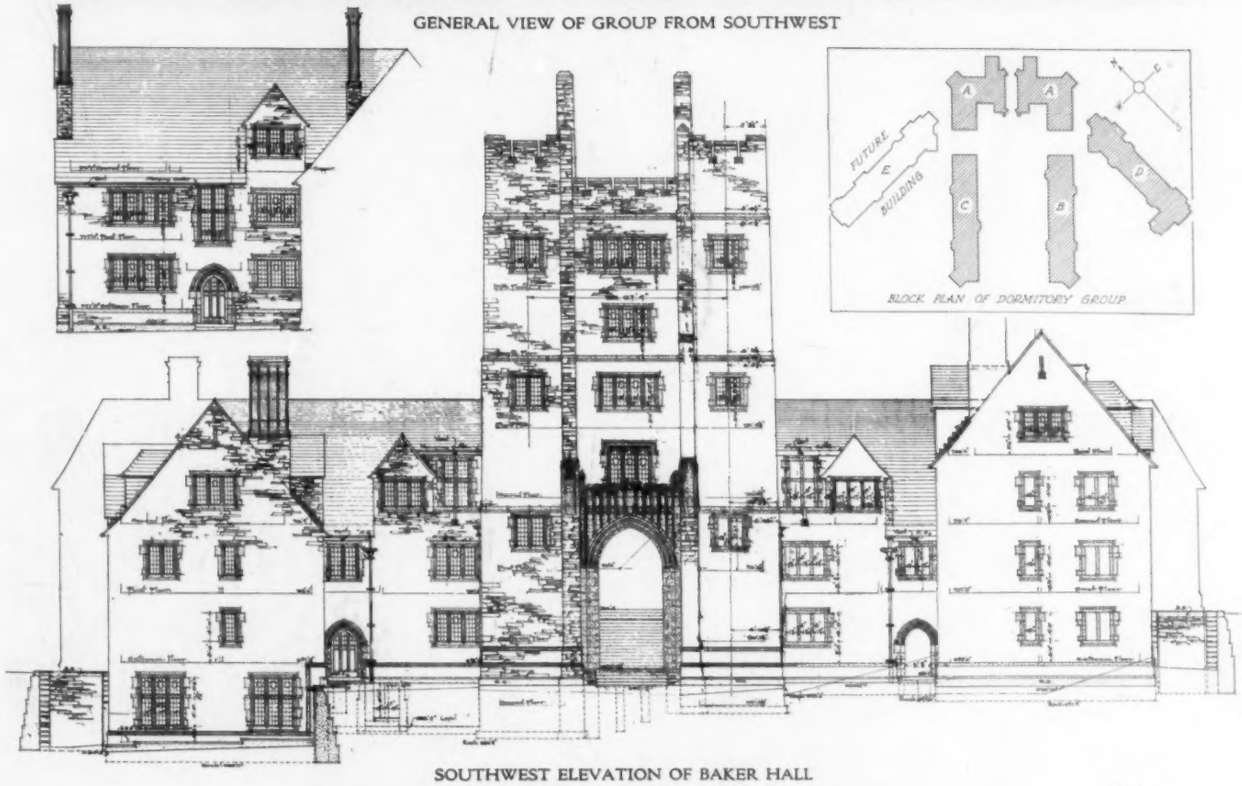


VIEW OF BAKER COURT FROM MIDDLE TERRACE SHOWING NORTH WING

DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS

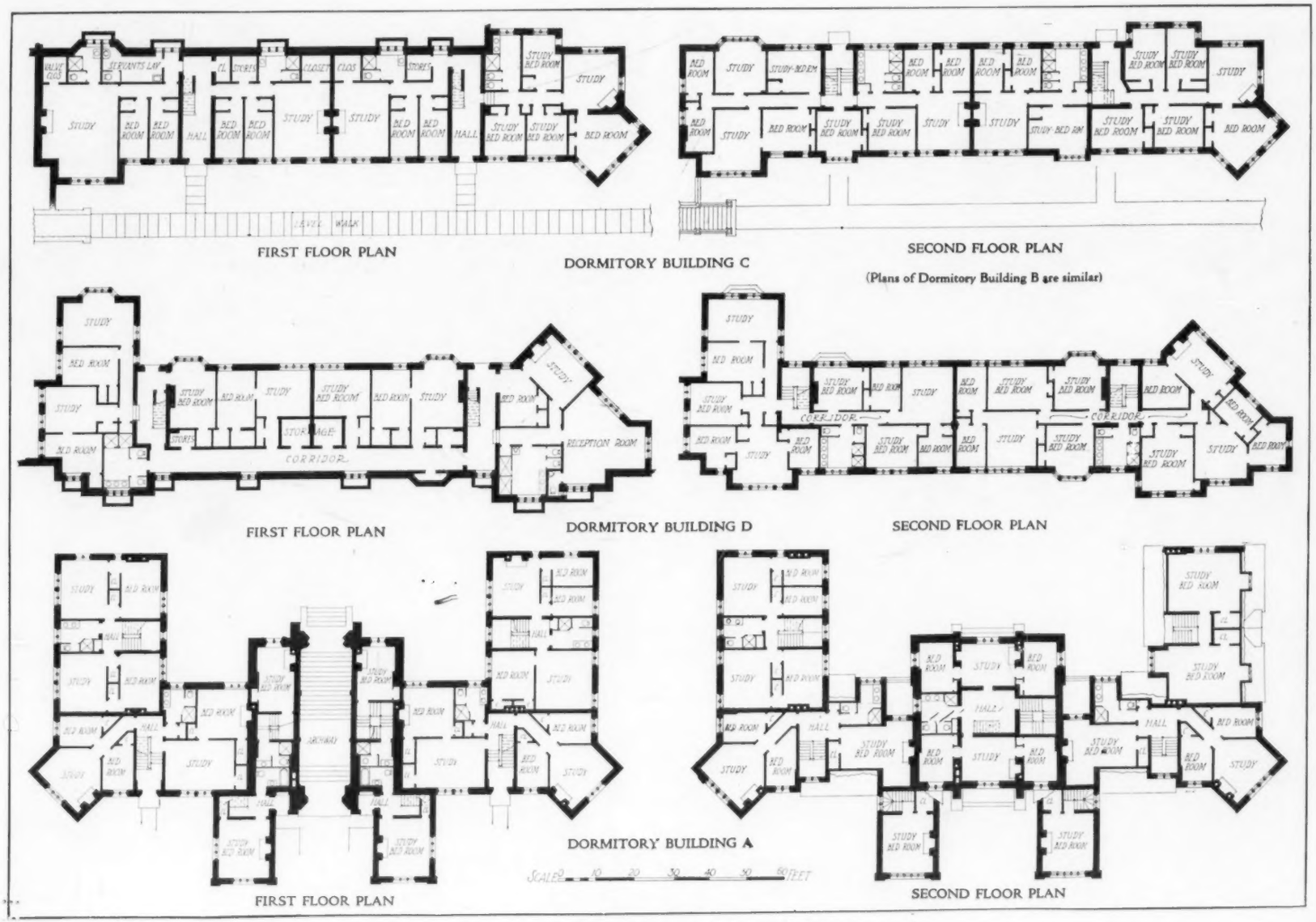
GENERAL VIEW OF GROUP FROM SOUTHWEST



SOUTHWEST ELEVATION OF BAKER HALL

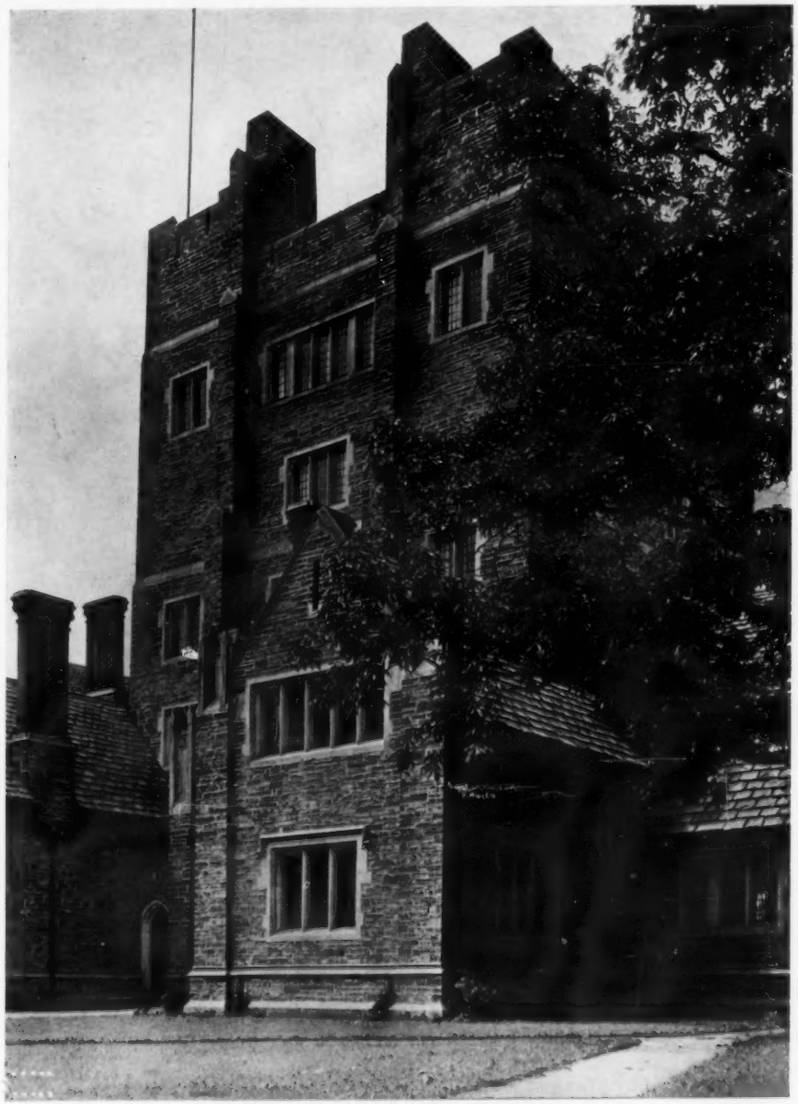
DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS

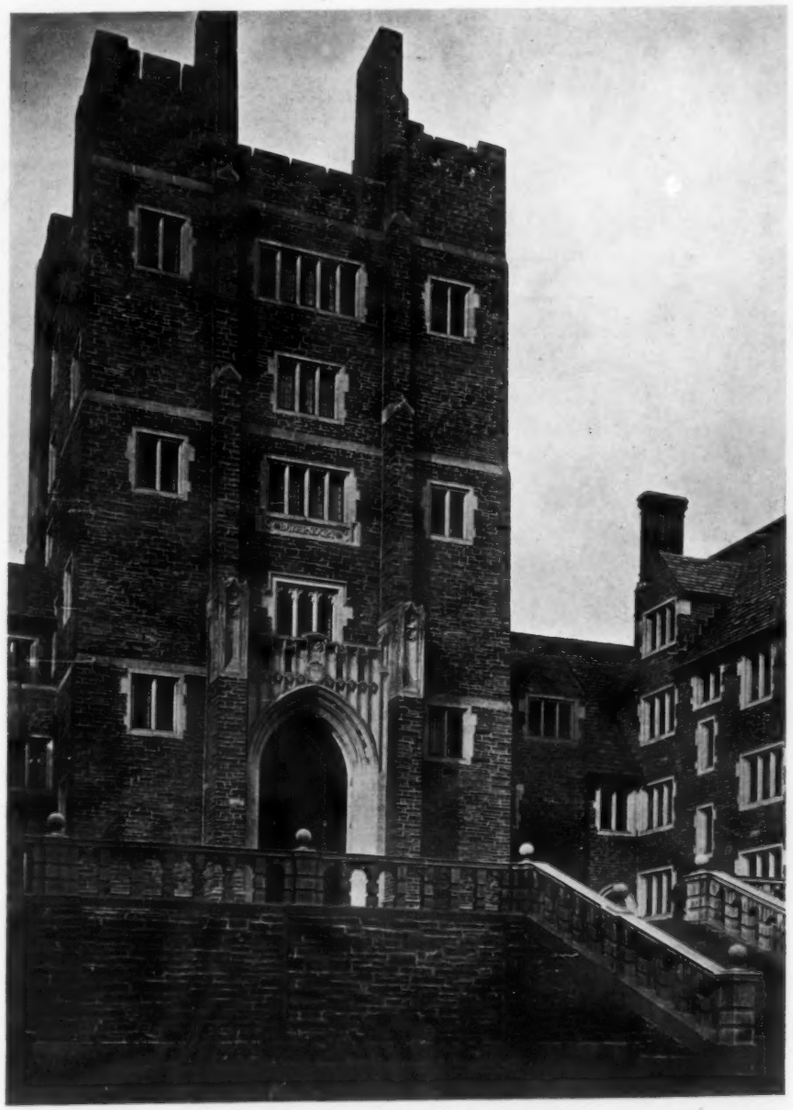


DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS



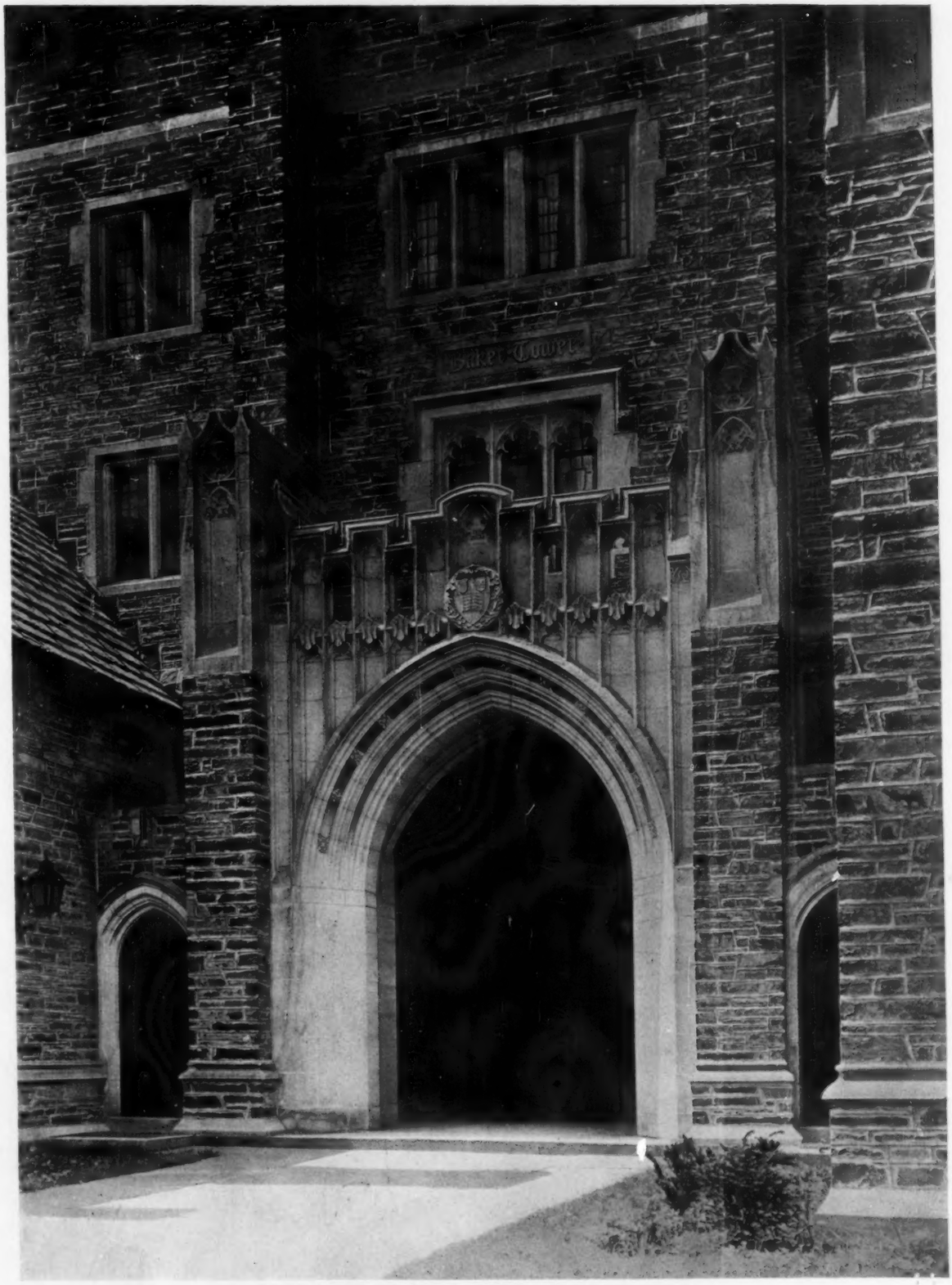
BAKER TOWER FROM NORTHEAST



BAKER TOWER FROM SOUTHWEST

DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

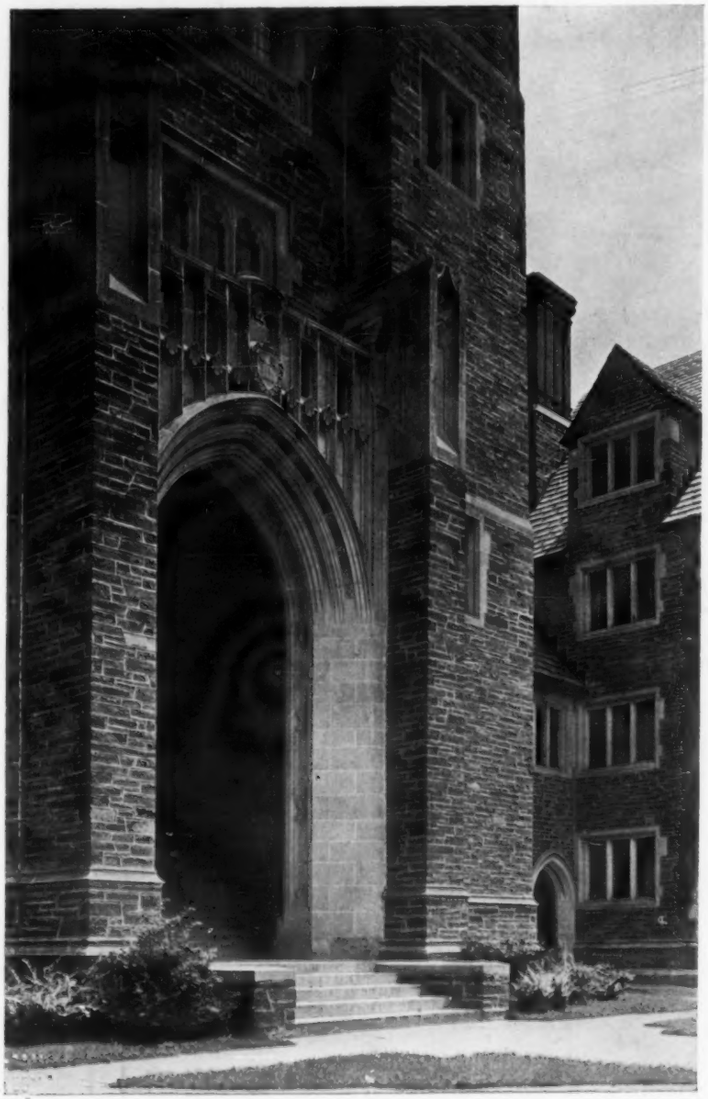
DAY & KLAUDER, ARCHITECTS



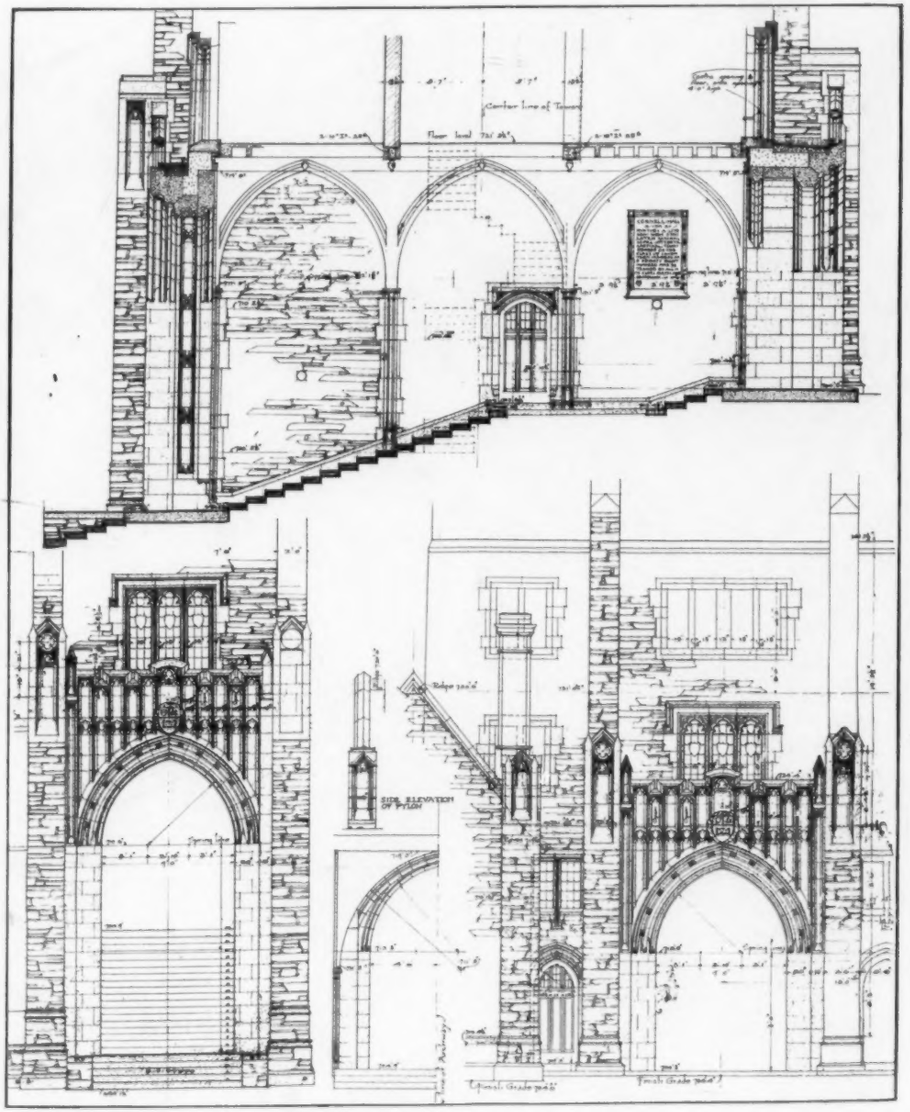
STREET ENTRANCE TO GROUP THROUGH BAKER TOWER

DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

DAY & KLAUDER, ARCHITECTS



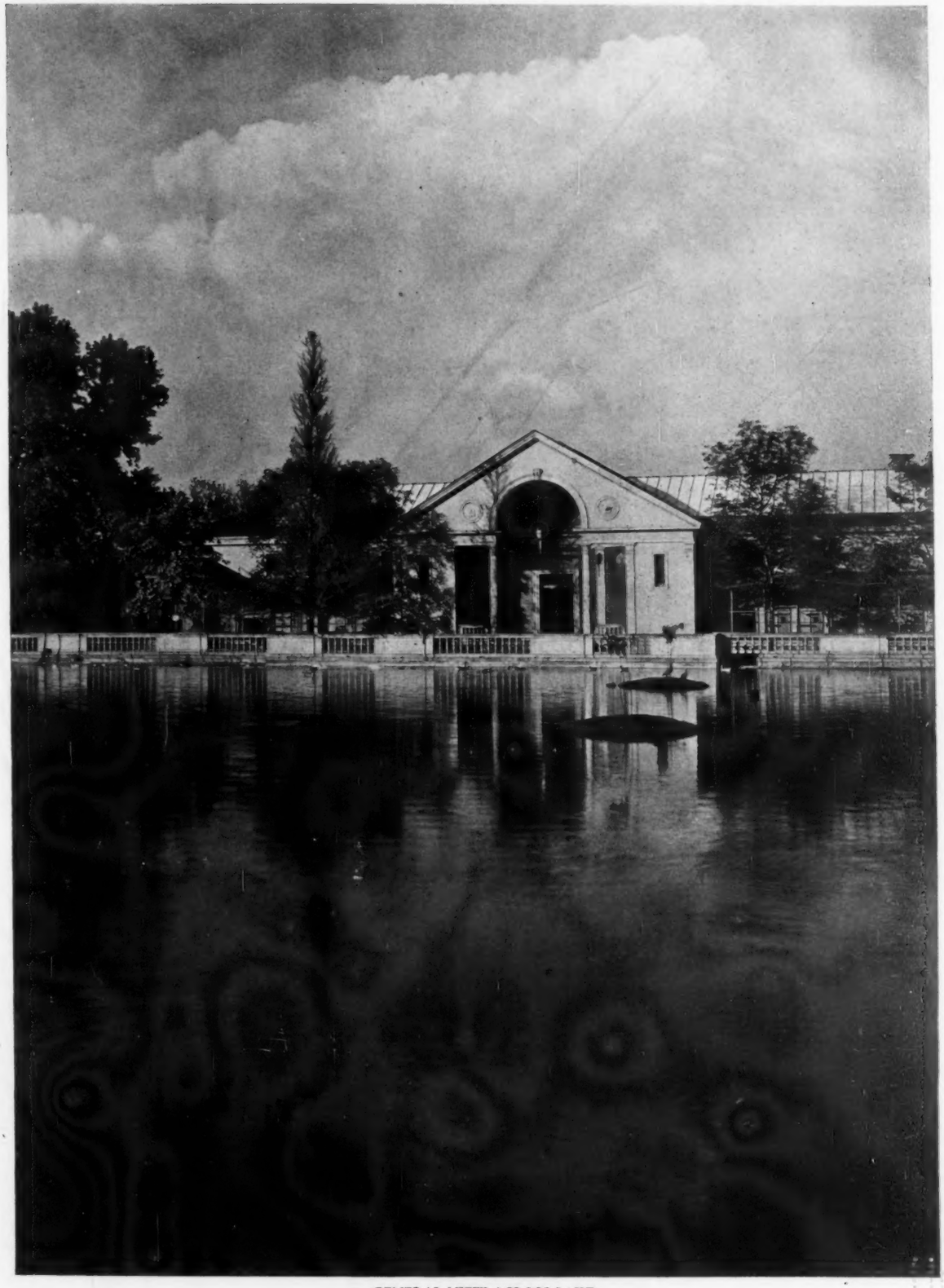
DETAIL OF COURT ENTRANCE TO BAKER TOWER



DETAILS OF LOWER PART OF BAKER TOWER

DORMITORY GROUP, CORNELL UNIVERSITY, ITHACA, N. Y.

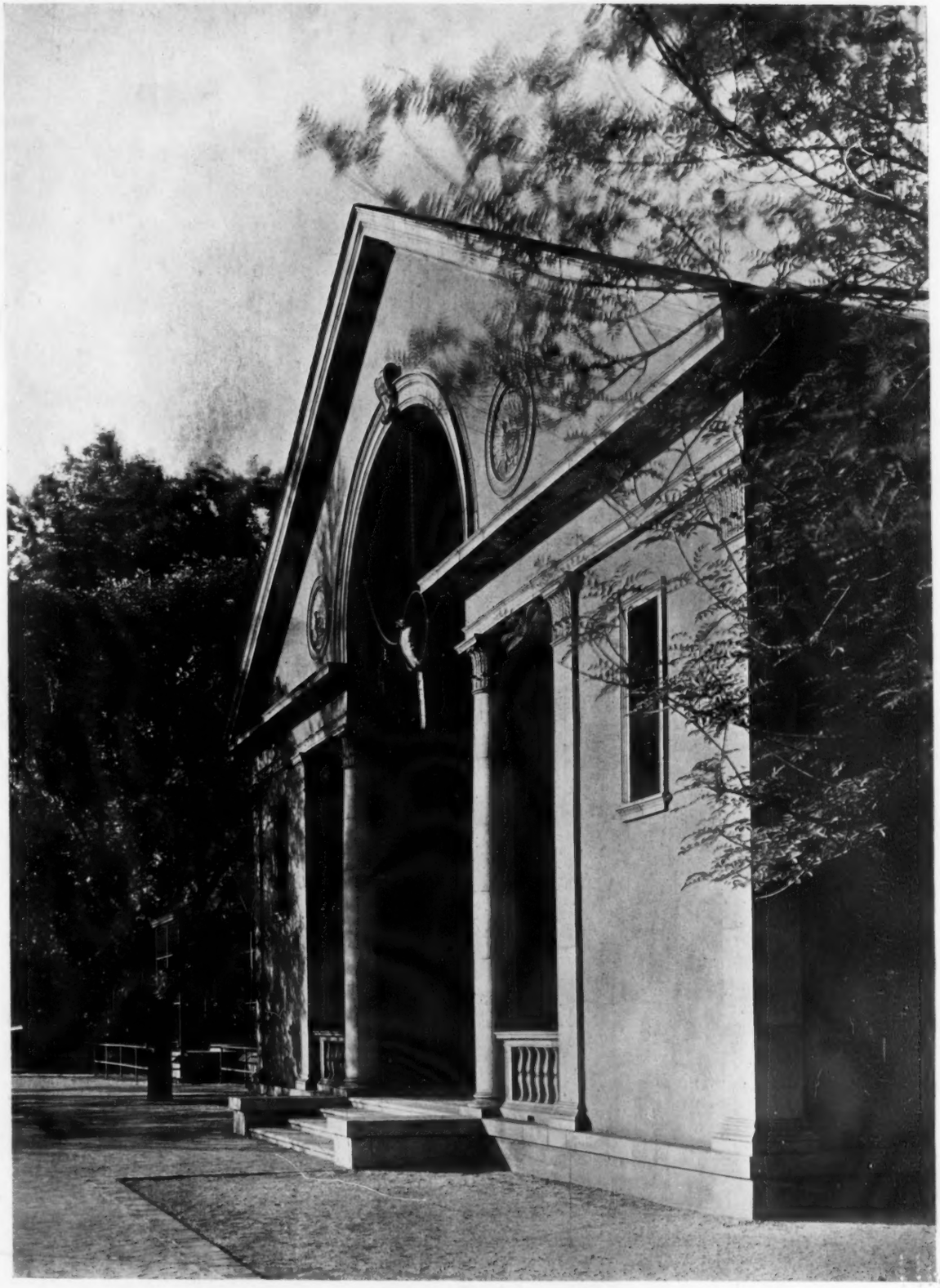
DAY & KLAUDER, ARCHITECTS



GENERAL VIEW ACROSS LAKE

BIRD HOUSE FOR THE ZOOLOGICAL SOCIETY OF PHILADELPHIA, PHILADELPHIA, PA.

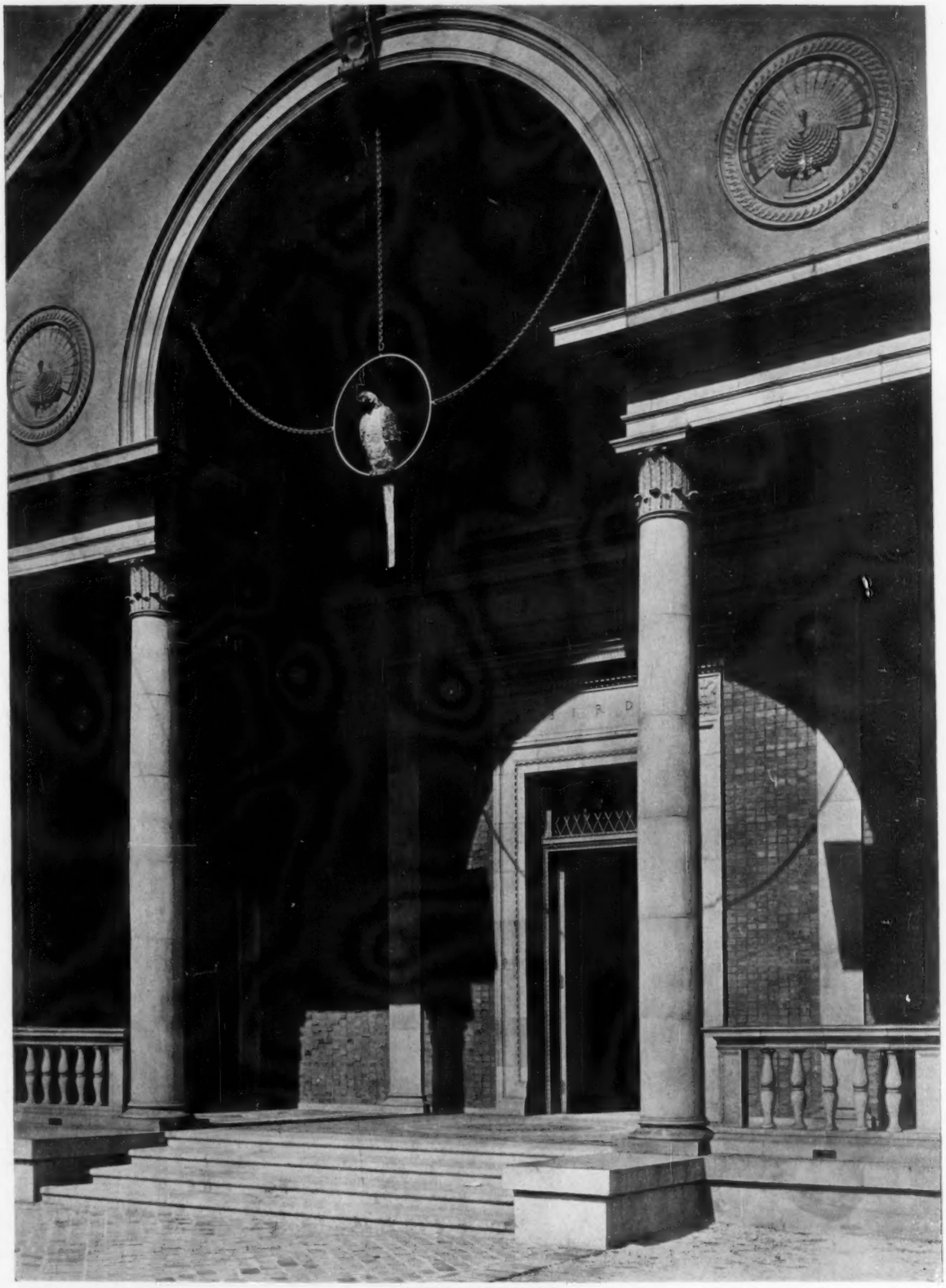
MELLOR, MEIGS & HOWE, ARCHITECTS



VIEW OF ENTRANCE PAVILION

BIRD HOUSE FOR THE ZOOLOGICAL SOCIETY OF PHILADELPHIA, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS



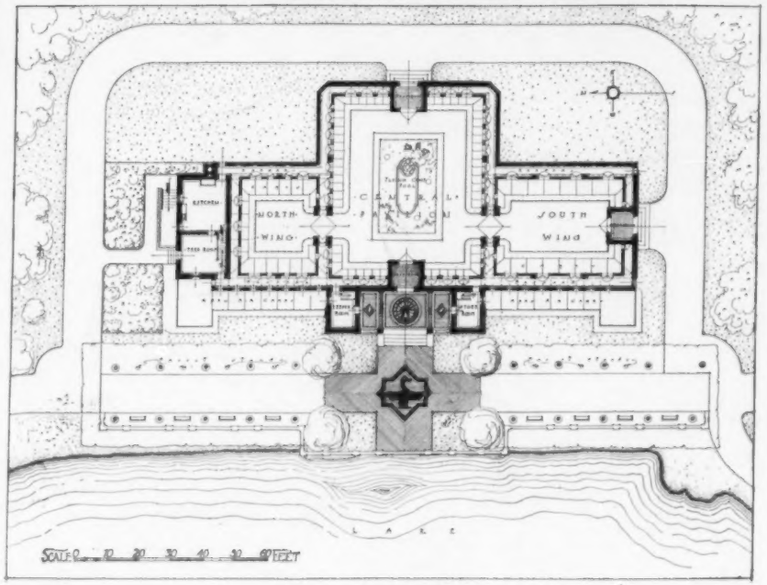
DETAIL OF ENTRANCE

BIRD HOUSE FOR THE ZOOLOGICAL SOCIETY OF PHILADELPHIA, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS

DETAIL OF TURNSTILE

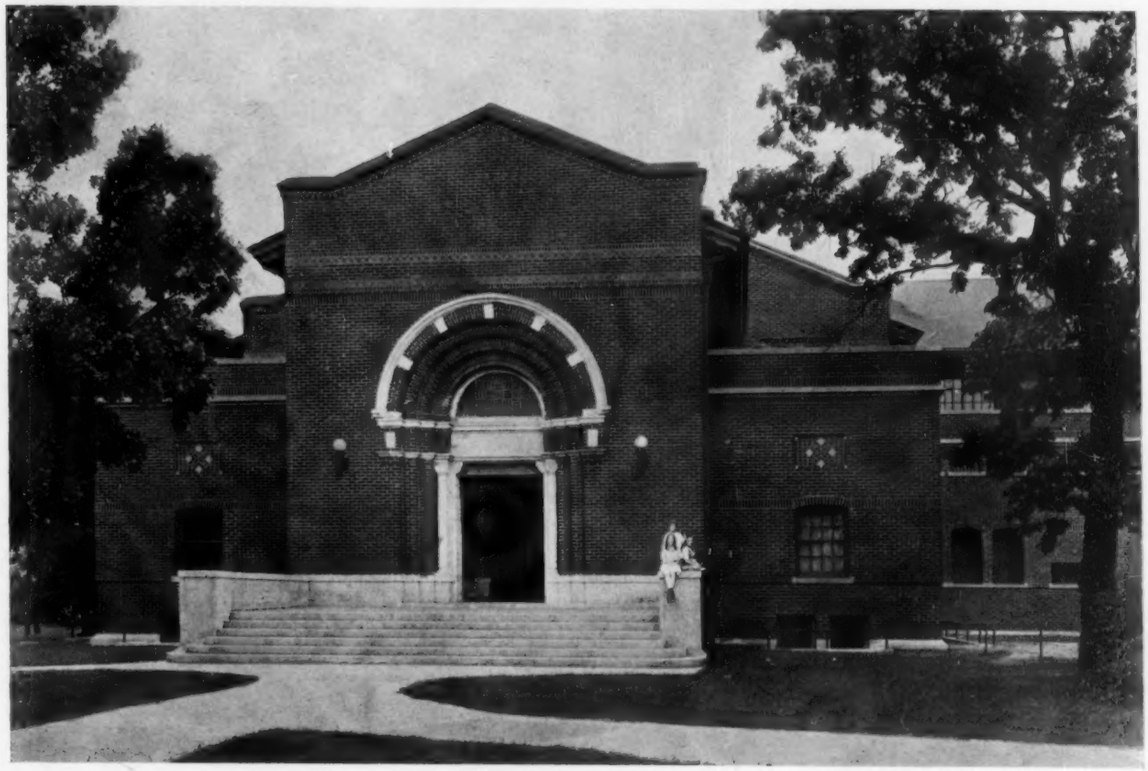
ELEVATION TOWARD LAKE



GROUND FLOOR PLAN

BIRD HOUSE FOR THE ZOOLOGICAL SOCIETY OF PHILADELPHIA, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS

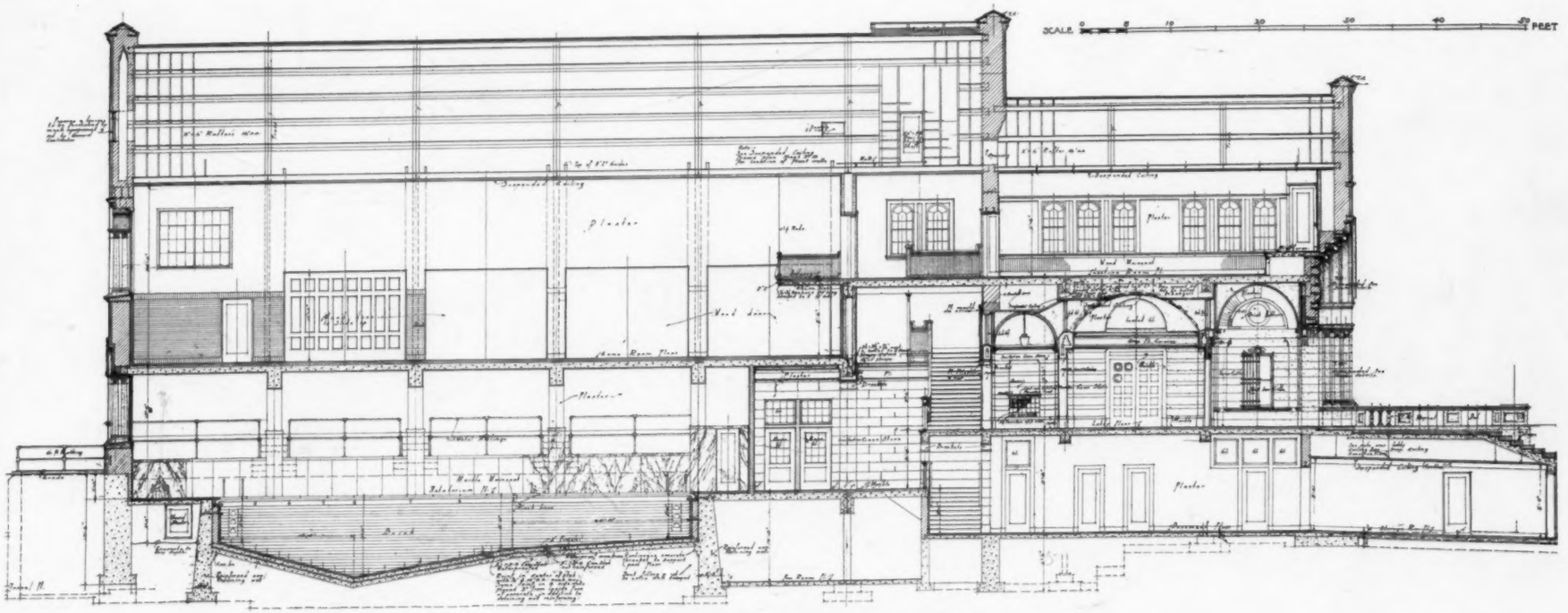


VIEW OF ENTRANCE FRONT

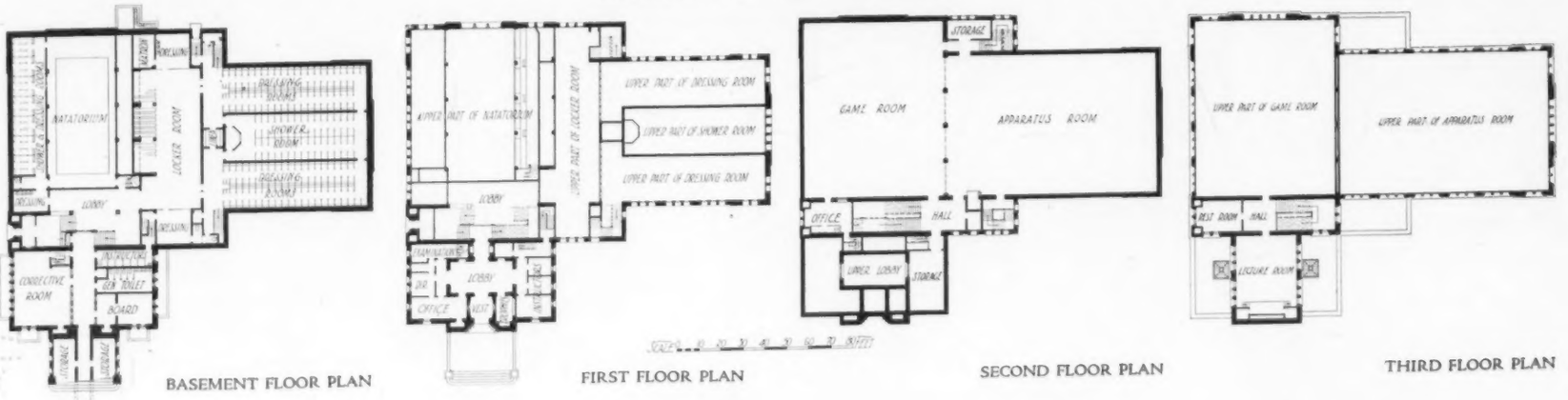
VIEW OF SIDE AND REAR

WOMEN'S GYMNASIUM, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

CLARENCE H. JOHNSTON, ARCHITECT



LONGITUDINAL SECTION ON MAIN AXIS

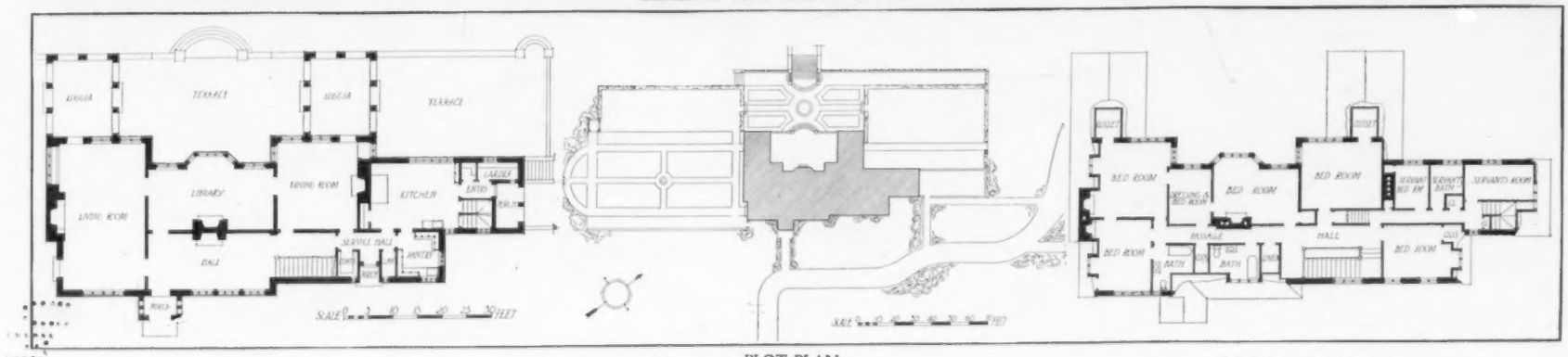


BASEMENT FLOOR PLAN — FIRST FLOOR PLAN — SECOND FLOOR PLAN — THIRD FLOOR PLAN

WOMEN'S GYMNASIUM, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

CLARENCE H. JOHNSTON, ARCHITECT

GENERAL VIEW OF ENTRANCE FRONT



FIRST FLOOR PLAN

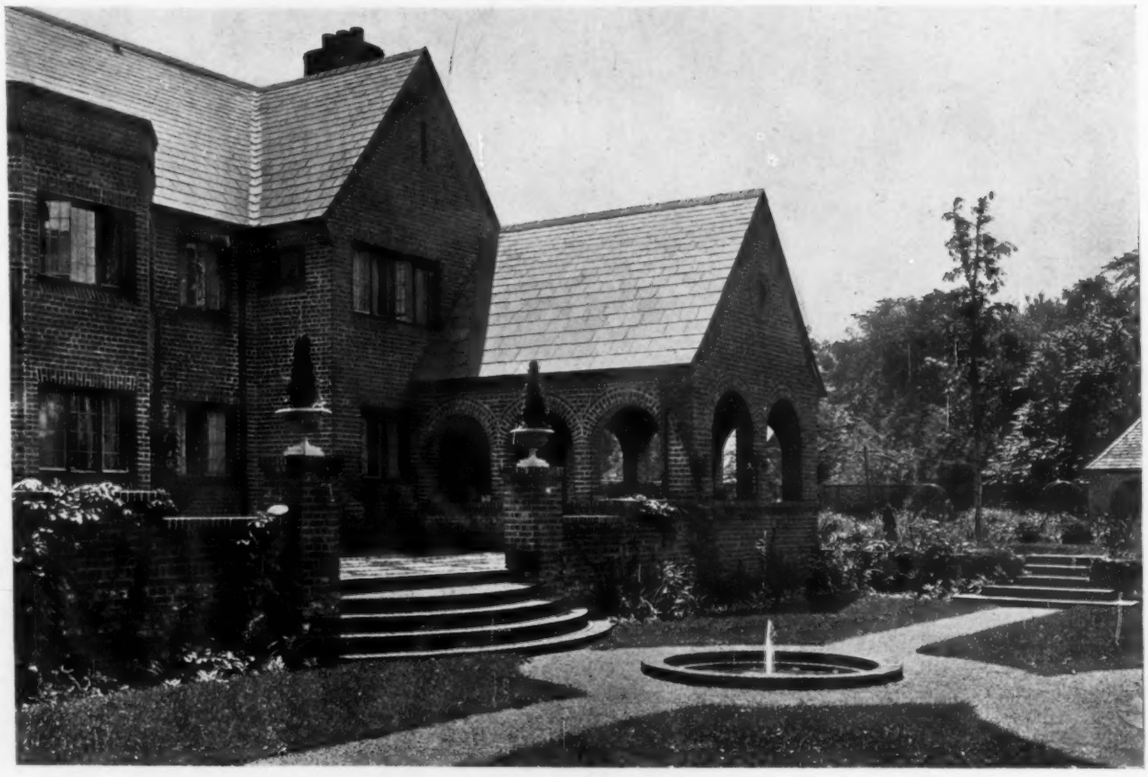
PLOT PLAN

SECOND FLOOR PLAN

HOUSE OF MISS ANNA M. STEENKON, SAUGERTIES, N. Y.

HENRY CORSE, JR., ARCHITECT

VIEW OF SIDE TOWARD GARDEN



VIEW OF TERRACE FRONT

HOUSE OF MISS ANNA M. STEENKON, SAUGERTIES, N. Y.

HENRY CORSE, JR., ARCHITECT

ENTRANCE HALL

LIVING ROOM

HOUSE OF MISS ANNA M. STEENKON, SAUGERTIES, N. Y.

HENRY CORSE, JR., ARCHITECT

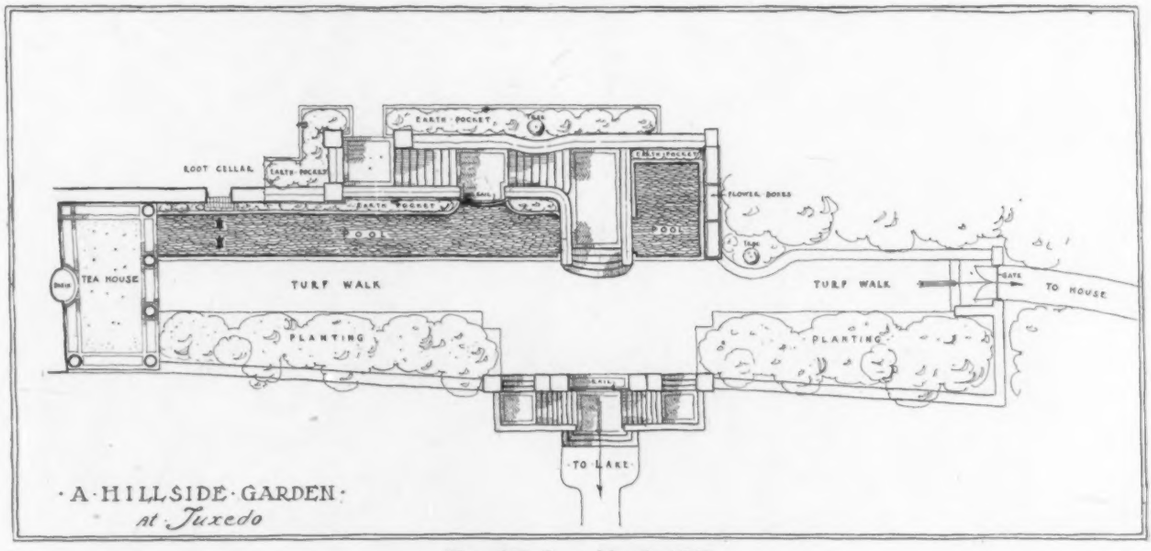
A Hillside Garden

ESTATE OF H. H. ROGERS, ESQ., TUXEDO, N. Y.

WALKER & GILLETTE, ARCHITECTS

THE garden shown in the accompanying illustrations is situated on a hillside that overlooks Lake Tuxedo, grading rather sharply down to the water's edge. Its setting is a terrace formed by a high retaining wall on the upper side and a smaller wall on the lower side. At no point, however, is the work of retaining strongly in evidence as the clever introduction of features serves to give the whole scheme a most natural effect. A point worthy of mention is that the work was accomplished by Italian laborers working under the direction of the architects on the site, few office drawings having been necessary.

The provision of water at the side of the turf walk after the manner of a moat is a medium for catching the reflections and sparkle of light and shade. The stucco walls have been given a rough texture that invites the cool mosses and clinging vines. The fountain, water head, wrought iron gate, and other features have been incorporated into the scheme with an easy and graceful



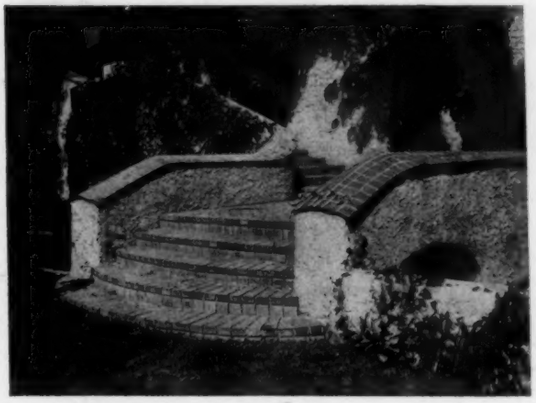
Plan of Garden at Tuxedo, N. Y.

FOUNTAIN IN TEA HOUSE

DOOR TO ROOT CELLAR

GARDEN OF H. H. ROGERS, ESQ., TUXEDO, N. Y.
WALKER & GILLETTE, ARCHITECTS

manner that makes them take a proper place in the setting. The tea house at the end of the turf walk is floored with tile and the rough textured stucco walls are decorated at the upper part with a free Italian rendering of festoons of birds, flowers, and masks in color.



Steps to Upper Terrace

A general color scheme has been observed not only in the architectural features but in the planting as well. The predominating colors are mauve and turquoise blue, the soft gray pink of the stucco affording a foil against which the bright blue flowers in the borders stand in contrast. The tiling in the long pool is of turquoise, making the expanse of water a brilliant note.

A pleasing feature of utilitarian intent is the root cellar, built into the side of the hill, with its doorway across the pool, savoring of old Spain. Two stone turtles with their backs above the shallow water afford a means of crossing to the ledge in front of the door. Rising gently from the terrace, brick steps with heavy tile ramps lead up to the high land above. These brick steps, the one other note of color, have landings paved in patterns at intervals. An iron rail on one bows out slightly to permit of a glance into the pool below.

The masses of planting are commendable in their fitness and relation to the architecture, and complete the effect of extreme simplicity and good taste. The spouting of water, the sheen of mosses, the ripple of breezes in the vines, and the patches of sunlight in the pool, all contribute to make this an ideal resting spot.

Interior of Tea House

VIEW LOOKING TOWARD TEA HOUSE

WROUGHT IRON ENTRANCE GATE

FOUNTAIN HEAD OVER POOL

GARDEN OF H. H. ROGERS, ESQ., TUXEDO, N. Y.

WALKER & GILLETTE, ARCHITECTS

The Artistic Expansion of Architectural Clay Products

ITS DEPENDENCE ON THE ARCHITECT FOR DIRECTION IN STYLE AND TREATMENT

By LEON V. SOLON

WHEN an industry embarks on a policy involving the cultivation of an art influence, it is beset with the necessity of mapping out that vague territory separating utilitarian purpose from art impulse. Commercial enterprise is more likely to find a response to its overtures in the art of architecture than from those arts activated by abstract influences, unrelated to everyday requirements.

Our present consideration is to attempt a general analysis of relations existing between potter and architect, with a view to discovering opportunities that may be mutually beneficial. At first glance, the respective attitudes of architect and manufacturer would justify one in assuming that a separate existence had been determined upon as a general policy, leaving any points of contact to the hazards of coincidence. The producer constantly lavishes thought, energy, and capital on efforts for which no place can ever exist in any orthodox architectural conception. The architect, on the other hand, lacks certain textures and treatment; were the technician only acquainted with their nature he could often satisfy these desires at the expense of a little ingenuity.

An alliance between an industry and architecture naturally implies that certain ideals and standards must be shared in common. The establishment of these aims, and the paths to be followed to realize them must be determined by the architect in his capacity of originator. The area covered by these points of joint interest is so vast and their nature so abstract that the commercial mind exercised in concrete problems has great difficulty in analyzing and grasping them alone. Progression under these conditions is bound to be negligible; business-like deduction is a poor guide in those fields where an unerring instinct is needed, and where the exercise of restraint is often more productive than the expenditure of violent energy.

The willingness of the manufacturer to make innovations cannot be questioned. The profusion of essays, inadequate and tasteless as they frequently are, absolve him from any suspicion on that score. Each year he must modify the appearance of certain of his wares. It would be to his advantage to know definitely what type of decoration would be most acceptable, sales would be assured by following it; but, as there is no bureau of information on the subject, the designer, instructed by the salesman, does his best, often in an atmosphere of complete artistic isolation.

Evolution of methods affecting business procedure, has rapidly modified the relations of architect, client, general contractor, and producer, necessitating changes in the latter's policies, points of contact, and ethical aims.

A growing prejudice on the part of the majority of clients to stereotyped design, and the strong appeal made by motifs showing individuality, lays a stress on the architect which must be adequately met if the impetus of success is to be maintained.

The thoroughness with which a building is now contrived in every detail entails thought and responsibility for many things formerly controlled by the general contractor. High standards in design and craftsmanship are being established by the architect as a result of active professional competition. He may no longer regard the efforts of the staff designer with complacency for purposes supplementing his own expert achievements. An appreciation of the value realized by suitable treatment of material, both in process and ornamentation, makes it self-evident that the best cannot be realized by rare or occasional contact, and that much benefit can be derived from collaboration with those who by environment and concentration have specialized.

To meet this condition, certain industries whose commercial prosperity is effected by their artistic status, have found it advantageous to change their point of contact, by placing an expert art department in direct touch with the architect, where formerly that of the sales department only existed.

The more abstract the problem — and none is more so than an indefinite desire for decoration — the greater the advisability for close contact between art department and architect. A multiplicity of interpretations can be generated by a competent designer from a description of requirements transmitted by a third party; the chances against a thoroughly satisfactory scheme being worked out are in proportion to the number of solutions that professional versatility can devise.

This point is worthy of consideration, if only from its bearing on the simplifying of means for obtaining decisions from clients. Skilful diagnosis and inoculation will always be the main factors in successful handling; the diagnosis being arrived at by a process of subtle suggestion on the

part of the architect; the inoculation being performed with a serum of tempting propositions, injected into the weakest spot.

By direct contact with the craftsman, suggestions tentatively proposed can be developed and invested with the most effective interpretation the craft can evolve, thus giving forcible emphasis to the proposition.

Collaboration of this description would materially assist the clay industry in its artistic expansion. Its initial sphere of activity is mechanical and chemical rather than artistic; of itself it can produce only beautiful elements which are means to an end, until combined and treated by the constructive perception of architect and artist.

The industry has many points enormously in its favor; the fact has long remained unchallenged that fired and glazed clay is the only medium holding adequate solution for architecture's most fascinating problem — the use of polychrome. Interest has rapidly grown among architects of recent years despite the meager facilities available, and a rather half-hearted and confused co-operation on the part of its producers.

Unlike the majority of the crafts, the potter's art is a sealed book to the layman. Involved in a multiplicity of mechanical and technical intricacies, the energy of the uninitiated is bound to exhaust itself in unfeasible suggestions. From this it is obvious that new decorative effects, revivals of useful methods from classic sources, and greater facilities for the use of polychrome, must emanate from the industry itself, along lines determined by the architect.

The question of color is the one which has the first claim on our earnest attention, owing to its difficulty in satisfying the expectations it excites, and to the fact that on this development depends the extent to which faience will be identified with architectural progress.

Color sense is not a factor in any way essential to an architect's professional equipment, as it is to that of all painters and many designers; in fact, a large proportion of architects in the front rank of their profession are deficient in this sense (as are the majority of sculptors)—without their work suffering depreciation thereby. It is reasonable to deduct that an essay in color harmony by the many architects is often a sudden and comparatively unprepared excursion into a field needing life-long concentration and a special gift. Assuming this to be the case, what practical assistance has the technician devised, by which an architect may promptly and successfully surmount his difficulties? From all accounts the same obstacles confront the architect to-day who wishes to introduce polychrome into his design that puzzled the profession ten years ago. Some, carried away by their enthusiasm as pioneers, made ambitious attempts, which were later to be cited as concrete proof, demonstrating that the artistic limit of the product had been reached, and found wanting.

The color position is due to the following fact:

The ceramic palette is at present composed of an accumulation of unrelated trials, produced without any idea that a palette should exist as a complete unit, comprising positive colors, foils, and blending tints — all related, and created to fulfil definite scenic requirements.

The ceramic color-maker has devoted his main effort to producing positive tints of the maximum purity, oblivious of the fact that in decoration, generally speaking, these colors can only be used with success, as accents to those quieter and more neutral tones which will always prevail.

The ceramic palette should have for its main divisions, the positive, composite, and neutral.

Each color according to its intensity, should be represented by from two- to four-tone values, as it frequently happens that, though the preliminary assembly of colors promises well, on its application to the detail the decorative balance is upset, by certain items becoming excessively or insufficiently prominent; a change of tone value in the disturbing color will rectify this. In many other ways can time and trouble be saved and effects improved by a gradated color scale, due to the fact that environment and the relative proportion of areas, exert a very pronounced influence on the apparent strength of tints. For the guidance of architects it would be quite feasible for the producer to establish standardized color harmonies, reproduced by color-process ready for filing; showing colored sections of friezes, mouldings, caps, or other frequently recurring details; these covering a sufficient variation of design to give him latitude to choose the type, harmony, and color balance most nearly related to his scheme. By this means any architect unskilled in the use of color might find a safe foundation from which to start, involving the expenditure of little more energy than is needed to choose a rug or hanging.

An analysis of color harmonies identified with many historic types of ceramic art points to the conclusion that the establishment of color systems must have been a common practice in the past.

The majority of the palettes of ancient polychrome pottery, though limited in range, were well balanced, and did not in any way represent the total of technical achievement of their day.

In each, the decorative aims of the period were so well anticipated that painters could produce eminently satisfactory results almost by formula. The prompt establishment of corresponding facilities by the faience industry to-day appears to be one of its most urgent needs.

The time is passed when technical excellence alone was an assured channel of commercial prosperity, in lines other than staples. In the clay industry of recent years a somewhat malignant influence has asserted itself, placing a premium on methods adjudged meretricious, and bad by every established ceramic standard. This started as an echo of the English Arts and Crafts movement, organized as a protest against the elimination of the mark of handicraft by mechanical systems; but, misunderstanding the original aims, the "primitive" was effected at the complete sacrifice of all real craftsmanship, so far as tile was concerned. These clumsy attempts were heartily welcomed by many architects who, being compelled for certain purposes to use tile in a *milieu* comprising objects that emphasized the peculiar character and beauty of different materials, found in these tiles an expression of plasticity and a texture which had been carefully obliterated from the commercial product. The only alternate previous to the vogue for this type of treatment was the regular commercial tile, the decoration of which was evolved in factory drafting room insulated from every artistic influence; the technical perfection of this article made its decorative shortcomings all the more inexcusable.

Some extreme of a corresponding nature may before long invade the terra cotta and faience field with disastrous results to industrial standards, unless new decorative horizons be revealed, stimulating the imaginative energy of the architect and proving that this art does not depend on the mishandling of clay to invest it with interest.

The use of polychrome in terra cotta so far appears to have but two methods of application — the coloring of reliefs and the insertion of the colored unit. Recent development has been pushed mainly in a direction which is the exact opposite of its natural sphere. With every tradition in the potter's history of infinite artistic variety and individual beauty, its producers now aim at imitations of another material.

The imitation of stone is in itself an interesting technical achievement, but does not stimulate the imagination to any architectural development of which clay alone is capable. Trend of thought in art is enormously influenced by initial suggestion; an architect is more likely to develop in his design the peculiarities of the substance imitated, than to evolve forms characteristic of the actual material, particularly when the technique of each is as remote as granite is from clay.

Surely, the magnificent heritage left us by potters of all nations must contain some suggestions of value, in accord with the standards and requirements of our contemporaries. Why should not the potter of to-day do as his predecessor in the days of the Italian Renaissance, who, noting the decorative value of sgraffito on the façades of his city, translated the effect to his craft, making an imperishable version of a fugitive method. This he adapted to beautiful vases and plaques, many of which can be seen in European museums. The pieces were usually of a red body, which when still "green" (moist) were dipped in a cream "slip" (liquid clay). When the cream coating was sufficiently set to handle, the design was traced, outlined with a sharp tool, and the ground scratched away, leaving the ornamentation in very slight relief against the dark ground.

This simple method should open a vast field to the architectural designer, already predisposed to the process by the vogue accorded to the cement sgraffito. It would be applicable to friezes, pilasters, tympanums, panels, decorated column shafts, soffits, and for innumerable other purposes; giving an effect of rare quality at a comparatively low cost and having the great advantage of pliability to ornamental variation.

Polychrome features could be developed in this process by the use of multi-colored slips on the natural colored ground; when finished with a semi-transparent mat glaze, great delicacy and architectural value could be easily realized.

The history of ceramics abounds in instances of potters seeking ideas in other crafts, and thereby adding interesting and individual methods to their repertoires. As an illustration there might be cited the instance of that mysterious and rare ware, known first as Faience of Henri II, and later as Faience of Oiron. The detail of its ornamentation is similar in conformation and scale to that devised for the decoration of leather bookbindings of that period. Logical deduction, in the absence of historical data, supports the inference that an imaginative and versatile potter, on seeing the manipulation of tools in the book binding craft, conceived the idea of using them as dies with which to impress patterns in the clay, filling in the incisions later with a dark clay, as the binder had done with gold. By a revised application of this principle, it should be possible to create a very individual architectural embellish-

ment of much delicacy and precision. With regard to the choice of a type of ornamentation with which to demonstrate the decorative value of a new process, it is usually a sound policy, when feasible, to start by identifying it with some classic ornamental method of incontestable excellence. In this particular case the treatment most likely to receive professional endorsement would be derived from those delicately silhouetted marble inlays seen in certain mouldings in Italian Renaissance churches.

From the inlayings of clays, the mind seeking new fields, by automatic impulse travels in the opposite direction. This new direction covers the many ways in which an ornament in colored clay may be affixed to a ground; ornamentation acquires a totally different decorative quality when treated in this manner, from that which it assumes when it is drawn from the mould incorporated with the ground, and afterwards colored.

The exquisite effects produced by Wedgewood in this manner seem to hold out a promise that some day they will inspire an architectural ceramist to produce a beautiful and distinctive embellishment for interior ceramic decoration, of such modified form and scale that the derivative will no longer be traceable in the new type created.

Further development of this method could extend to many popular phases of decoration, for the correct translation of which, faience has the means of expression. It would render with much feeling the frail delicacy of the Chinese Chippendale; the picturesque detail of the Elizabethan and Jacobean, and the scattered motifs of the Charles II period could be made very valuable for purposes for which the severer classics are inadvisable.

This meager insight into the decorative possibilities of faience may stimulate thought and encourage future effort; but there are certain points which the technician should put before the architect which will enable him to judge the technical merit of different grades of the product.

The hand-made faience tile is produced by simple and almost archaic methods. The clay after preparation is beaten out on a smooth bed and sliced off with a wire to the desired thickness. This clay is a mixture, into which ground pitchers are introduced; the reason for this addition is that the body is rendered more rigid at a high temperature by having a certain proportion of its bulk freed from contraction by a previous fire. It permits a temperature to be reached with safety which would distort and warp the natural clay. This type of tile, made of hand-beaten clay, cut by hand, showing the rough wire-cut back, should be the only one to which the name of faience rightly belongs. Unfortunately, the vagueness of this term has permitted its application to products made by machinery, either of compressed clay dust, or of plastic clay manipulated mechanically.

In the former process the clay is deprived of its plasticity by drying, is then ground to dust and shaped by compression in dies. These can easily be identified by the smooth surface left on the reverse of the tile by the back-plate of the die.

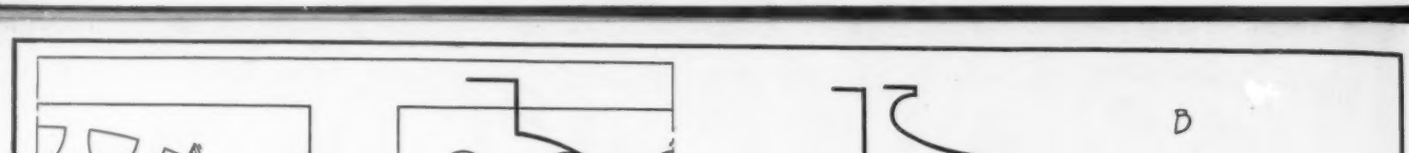
A totally different machine is used for the plastic repressed tile. Plastic clay is fed to the machine which resembles in general principle the domestic mincing-machine. The clay leaves the machine on a belt through a gauge giving the width and thickness of the tile, and is automatically cut into squares. These squares are next placed into another machine to true them by pressure. This type of tile may usually be recognized by a trace of the paper, put at the back of the clay to prevent sticking to the die, which shows on the edge.

These points are worth noting, as they constitute simple methods of identification which place the architect in a position where he is independent of assurances by interested parties. A general knowledge of material with simple methods of judging grades of quality are necessary to give the architect that confidence which must accompany all new experiments.

A vast resource of rich inspiration lies fallow, which, if judiciously applied would assure the investment of considerable industrial energy. Wherever ceramic art has reached its highest attainment it has been by the combined effort of artist and potter — the beauty of the material developing in proportion to the artist's skill.

Commercialized methods are not to be blamed entirely for the separation of art from many industries. Its elimination dates back in many cases to about the middle of the nineteenth century — to the period when modern economic principles appear to have been first instituted in business organization. Everything in any way connected was weighed on its merits, and, as at that time art in every country happened to be at its lowest ebb, its existence was not justified — a condition which fortunately no longer exists.

Ours is the age for the co-operation of specialized effort. An era has just dawned and much will be achieved in this country that will be handed down with honor to posterity. The potter hopes that our day may see architecture graced by the use of the humble clay, and that it may help to establish, beyond argument, that no material is gross that is touched by art.



THE FORUM COLLECTION OF EARLY AMERICAN ARCHITECTURAL DETAILS

PLATE FORTY-FOUR

THIS house, built about 1800 by Langley Boardman, is one of the simplest and most beautiful of the square, three-story type of early residence in New England. The facade is distinguished by the curved porch supported by graceful attenuated columns. The delicacy of the mouldings and simplicity of composition are in complete accord with the house. The door itself is mahogany, with an inlaid oval of whalebone in each of the six panels. The walls of the house are covered with plain siding.

ENTRANCE PORCH, LANGLEY BOARDMAN HOUSE, PORTSMOUTH, N. H.

Built about 1800

MEASURED DRAWING ON FOLLOWING PAGE

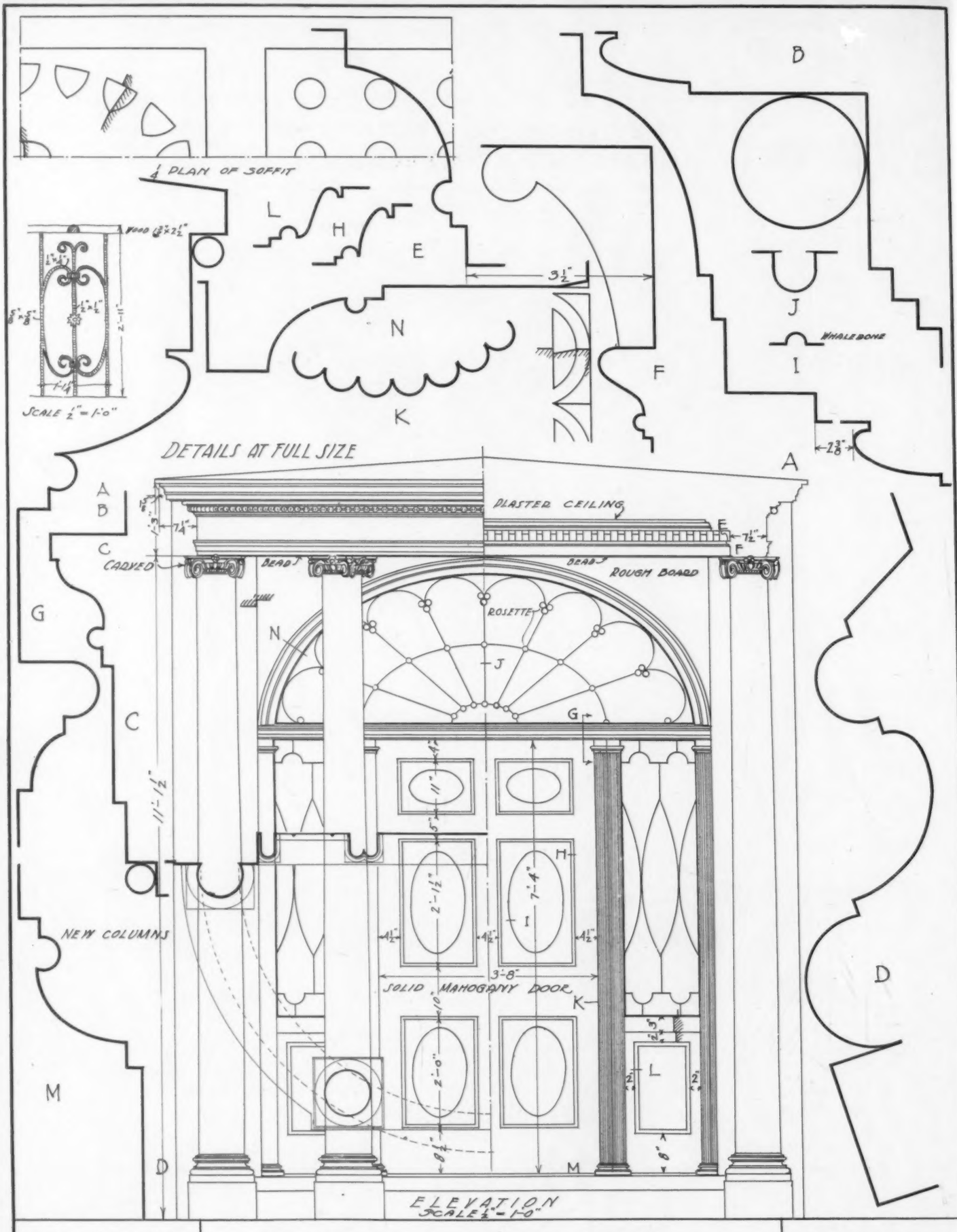


PLATE 44
SEPTEMBER-1917

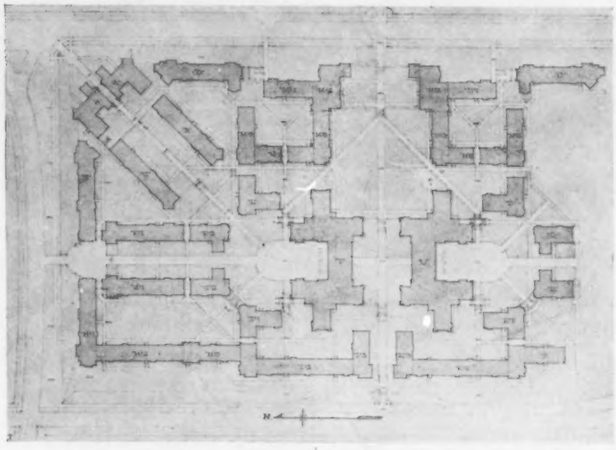
ENTRANCE BOARDMAN HOUSE
PORTSMOUTH N.H.
BUILT ABOUT 1800

MEASURED AND DRAWN BY
GEORGE H. HIGGINS

New Dormitory Group at Cornell University

DAY & KLAUDER, ARCHITECTS

THE site occupied by the new Cornell dormitories consists of a tract 1,000 by 600 feet in area, the center of which lies about 100 feet below the level of the campus, and the land, together with the buildings on it, is completely overlooked in the view from the campus to Lake Cayuga. By a steep pathway from the northeast corner of the site, important academic buildings on the campus above are reached. A station of the street car line is to be located near the center of the southwest border of the tract, at the end of the axis across the tract and coinciding with the library tower on the campus above. Considerable traffic will eventually move diagonally across it, and this suggested the diagonal axis through and between three of the buildings which comprise the portion of the group as now built.



Plot Plan of Proposed Dormitory Group at Cornell University
Day & Klauder, Architects

The group about the diagonal axis at upper left-hand corner has been completed
The total capacity of the entire group will be 1,600 men

The architects were obliged to meet the condition that there must be sunlight in every room of the group during some part of each day, and placing the long axis of the buildings, which are not more than 32 feet wide, north and south, with rooms on each side, effected the desired result. Another condition was that the buildings should not be too long — or, in other words, that there should not be unlimited continuity in the line of the buildings, as is so often found in dormitories in the Collegiate style here and in England. Separation for the free passage of air was necessary.

In working out the plans the architects regarded these conditions as assets in the design and they were of considerable influence in giving the group many distinctive characteristics. Thus, because of the openings between units, the use of gabled copings at the ends of the buildings was not adopted, inasmuch as such a device would too definitely determine the individual buildings, and so cause agitation by reason of the light color and prominence of the many copings. By the absence of such a treatment, a certain austerity was gained, which is common in the best English work, and at the same time the cost of the dressed coping stones and the copper flashings necessary with that treatment was saved.

A natural condition was the fact that the lot, while approximately level from north to south, had a fall of 60 feet in its width. The architects determined upon a division of the plot into courts to accommodate all of the contemplated buildings as shown in the plot plan reproduced herewith. It was found that the width, or east and west dimension of the lot, would permit of approximately five of these, and in dropping each court 10 feet, the problem of grade was solved. Story heights have generally been made 10 feet from floor to floor — 9 feet in the clear, consequently a design with a wall containing three stories of windows on one side and two stories of windows on the other, seemed a perfectly natural outcome. It gives the informal character so desirable in this style, with the grace and impression of having been caused by natural conditions.

Another important asset was the stone used in the structures. There was at Cornell a quantity of stone which seemed to the architects a perfect building material that previously had been used only in dry retaining walls, with no thought of its suitability for the finished walls of buildings. Upon opening a quarry near by, sufficient stone was discovered, not only for the entire group of buildings designed to occupy the present tract, but for other future buildings elsewhere on college property, and this at a minimum expense to the institution and a maximum effectiveness in the character and beauty of the buildings. It is a slaty stone, exquisite in color and is laid on its natural bed, as may be seen in the illustrations. The face is the natural seam face, which is perfectly straight and plain, but upon being laid, at once assumes the quality of age which is so vital to the appearance of these buildings.

EDITORIAL COMMENT

WITH large numbers of men entering the service of the Government, and the consequent decrease among those engaged in civil occupations, manufacturers and building contractors are realizing the great scarcity of trained mechanics. The lack of skilled labor in the building trades has for some years past been very marked, and in addition to seriously hampering speedy construction, it has also served as an important contributing factor to the advance in the cost of building.

Immigration has now, of course, been reduced to a minimum figure, but even under normal conditions in years previous to the war, the acquisition of mechanics through immigration was slight; the really skilled workers found ample employment in their own countries and only the poorly equipped came here. The result has been, especially in the East, that there has grown up a class of foreign-born inferior mechanics which has had the evil tendency of lowering our already sinking standards of craftsmanship. Every architect has had many occasions to regret the low quality of craftsmanship he must accept if his building is to be turned over to the owner on schedule time, but with conditions as they exist there is no alternative. The great number of mechanics now required for government construction, in addition to the numbers called into the service, places a decidedly serious aspect on the situation and makes it imperative that immediate steps be taken to recruit workmen who can meet the abnormal demand for labor in the building field, certain to take place with the close of hostilities.

The general decline in the quality of labor began with the advent of machinery during the latter half of the nineteenth century, and the minute subdivision of work which followed as a natural sequence. The decline was further hastened by restrictions of labor organizations governing the number of apprentices and also by the unwillingness of many employers to teach beginners. Previous to this, most workmen were masters of the craft in which they were engaged, and in the old labor guilds a man could not become a member until he had passed through all the stages of development. Some method of education, whether within the occupations themselves or not, must be devised which will approximate in its effect the former standards of craftsmanship secured through the guild system.

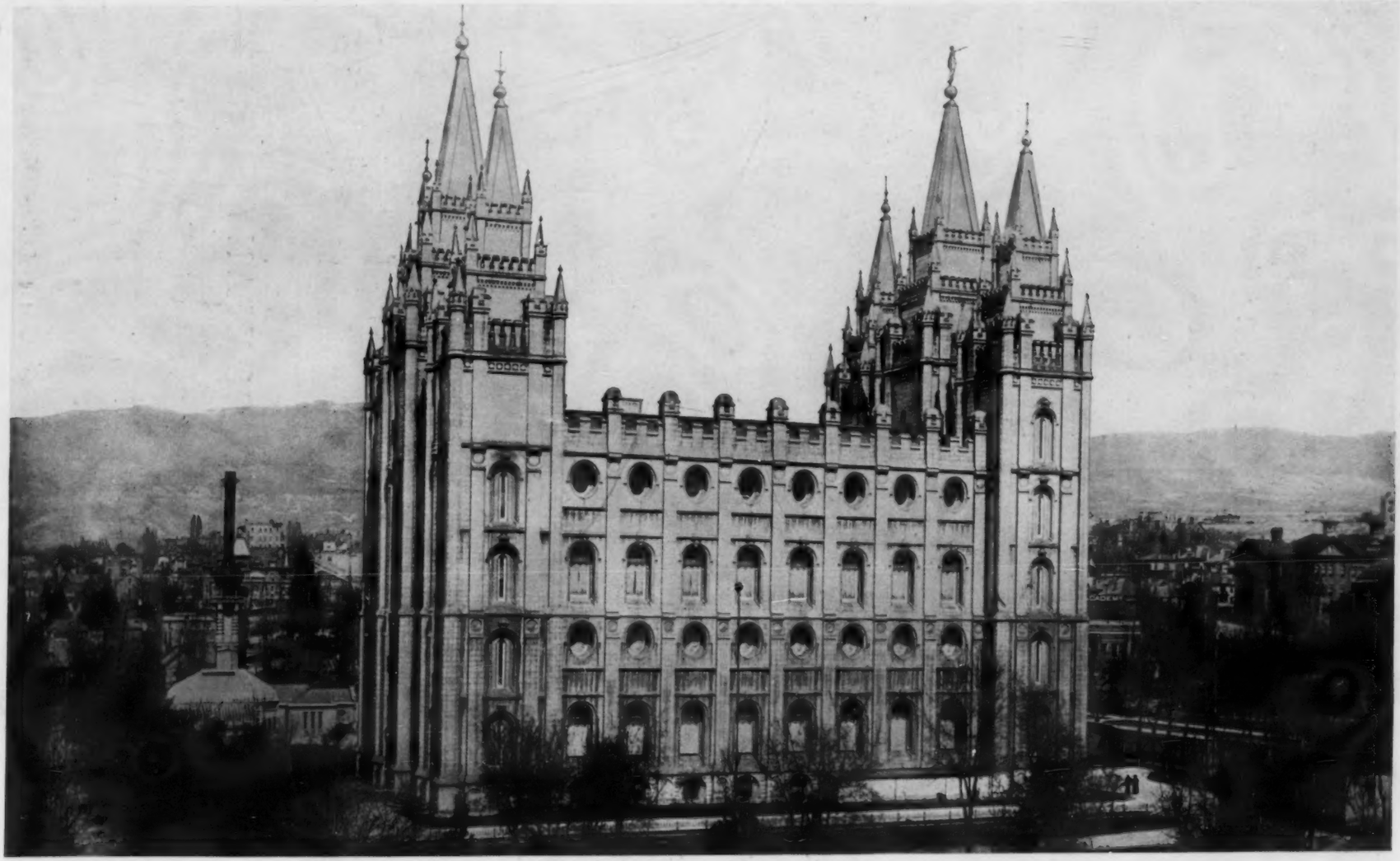
In the manufacturing field the shortage of skilled labor has not been overlooked by intelligent employers and at the present time a conference board, composed of representatives of national manufacturers' associations, is giving consideration to the subject so far as it relates to factory employment. Out of the serious thought and study expended by this board there has been evolved a strong demand for the revival of the apprenticeship system in practically all industries.

Similar attention should be given to the development of building mechanics for, at the close of the war, if the demand in numbers for such men will not be more than for men in manufacturing enterprises, the demand for better skilled workers will certainly be greater. It is the patriotic duty of every one concerned with building to undertake at once the promotion of any means which will aid in filling the vacancies now apparent in the ranks of artisans and to raise the standard of skill in the various trades. The public and semi-public trade schools which have been established in recent years are doing good work but their activities can still be greatly increased and a closer cooperation between them and the industries brought about to the ultimate benefit of thousands of young men who now end their school life without any specific or direct training for the work they are to do. The promotion of skill in building mechanics is an urgent demand of the time and in as much as the successful outcome of the architect's work is so dependent on the mechanic, it is a problem of vital interest to the practise of architecture and worthy of the concerted action of the profession.

NATIONAL HOUSING CONFERENCE

IN view of acute conditions arising from housing shortages in almost every American industrial center which has been boomed by war industries, announcement of the Sixth National Housing Conference on Housing in America assumes unusual interest. The conference will take place in Chicago, October 15, 16, and 17 at the Hotel LaSalle, under the auspices of the National Housing Association.

Discussion will center on the various problems of industrial housing and some of the country's leading experts in this field will contribute papers. Among the subjects to be taken up are, "How can We Cheapen the Workingman's Dwelling," "The Best House for the Small Wage Earner," "The Housing of the Single Worker," and the manner in which Bridgeport, Conn., which practically doubled its population in a year's time, grappled with its housing problem.



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THE UNION ARCADE, Pittsburgh, Pa.
American Architect, Feb. 21st, pages 60–61.
Architectural Forum, March, pages 41–42.
Buildings & Building Management, May, pages 23–24.

THE EQUITABLE BUILDING, New York, N.Y.
American Architect, March 21st, pages 19–20.
Architectural Forum, April 1st, pages 35–36.

CONTINENTAL & COMMERCIAL NATIONAL BANK BUILDING, Chicago, Ill.
American Architect, May 2nd, pages 21–22.
Architectural Forum, May, pages 45–46.
Buildings & Building Management, June, pages 23–24.

HOTEL TRAYMORE, Atlantic City, N. J.
Architectural Forum, June, pages 39–40.
Buildings & Building Management, July, pages 23–24.

JOHN WANAMAKER COMPANY BUILDING, Philadelphia, Pa.
Architectural Forum, July, pages 33–34.
Buildings & Building Management, August, pages 23–24.

DODGE BROTHERS MOTOR CAR COMPANY MANUFACTURING PLANT, Detroit, Mich.
Architectural Forum, August, pages 37–38.
Buildings & Building Management, Sept., pages 23–24.

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(See preceding page for illustration)